

INITIAL PUBLIC OFFERINGS AND THE COST OF INFORMATION

By

KATHLEEN ANN WEISS

A DISSERTATION PRESENTED TO THE GRADUATE SCHOOL
OF THE UNIVERSITY OF FLORIDA IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY

UNIVERSITY OF FLORIDA

1988

Copyright 1988

by

Kathleen Ann Weiss

ACKNOWLEDGEMENTS

I would like to take this opportunity to thank my dissertation chairman, Roger Huang, for his invaluable advice, criticism and encouragement. To Roy Crum, Roger Blair and Dave Brown, I am grateful for their constructive comments.

I am indebted to my colleagues at the Securities and Exchange Commission for their support and advice. In particular, I would like to thank Ken Lehn for giving me the opportunity to both work and learn at the Commission, to Darrell Williams who provided reassurance in trying times and to Mark Mitchell, Jeff Netter, Dean Furbush and Dave Malmquist who patiently answered all my questions.

To Thomas L. Hanley, Esq., I extend special thanks for his technical and editing advice.

Finally, to Deborah Wright Gregory who has been my friend and companion through all stages of the Ph.D. program, I thank her for her kind and unfailing support.

TABLE OF CONTENTS

	<u>page</u>
ACKNOWLEDGEMENTS.....	iii
ABSTRACT.....	iv
 CHAPTERS	
1 INTRODUCTION.....	1
2 LITERATURE REVIEW	5
3 DATA AND DESCRIPTIVE STATISTICS.....	15
Source and Description of Data.....	15
Descriptive Statistics.....	16
Summary.....	25
Notes.....	26
4 THE COST OF INFORMATION AND INITIAL RETURNS OF INITIAL PUBLIC OFFERINGS...	27
Introduction.....	27
Data.....	31
Empirical Results.....	31
Percent of Assets Offered.....	31
Leveraged Buyouts.....	42
NYSE and AMEX Listed Securities Versus OTC.....	46
Summary.....	49
Notes.....	50
5 THE RELATIONSHIP BETWEEN SECONDARY SHARES AND THE COST OF INFORMATION ON THE RETURNS OF INITIAL PUBLIC OFFERINGS.....	52
Introduction.....	52
Empirical Results.....	54
Summary.....	61
Notes.....	62

6	THE COST OF INFORMATION AND UNDERWRITER ACTIVITY.....	63
	Introduction.....	63
	Empirical Results.....	64
	Summary.....	70
	Notes.....	70
7	CONCLUSION.....	71
APPENDICES		
A	LIST OF VARIABLES IN INVESTMENT DEALER'S DIGEST DATABASE.....	74
B	NAMES AND OFFER DATES OF INITIAL PUBLIC OFFERINGS OF LEVERAGED BUYOUTS.....	76
C	COMPARISON OF FULL IPO SAMPLE AND LBO SAMPLE.....	78
D	COMPARISON OF IPO SAMPLE AND LBO SAMPLE BY THE ASSETS OF THE FIRM.....	79
E	COMPARISON OF IPO SAMPLE AND LBO SAMPLE BY THE AMOUNT OF THE OFFERING.....	82
F	MEAN FIRM AND OFFERING CHARACTERISTICS FOR UNDERWRITERS HAVING TOTAL DOLLAR AMOUNTS OFFERED GREATER THAN \$10 MILLION AND/OR TOTAL NUMBER OF ISSUES GREATER THAN TWO.....	85
REFERENCES.....		93
BIOGRAPHICAL SKETCH.....		95

ABSTRACT OF DISSERTATION

Abstract of Thesis Presented to the Graduate School
of the University of Florida in Partial Fulfillment of the
Requirements for the Degree of Doctor of Philosophy

INITIAL PUBLIC OFFERINGS AND THE COST OF INFORMATION

By

Kathleen Ann Weiss

August, 1988

Chairman: Roger Huang

Major Department: Department of Finance, Insurance and Real
Estate

The objective of this study is to provide evidence in support of Rock's hypothesis that the higher the cost of information, the greater is the underpricing required to compensate investors in initial public offerings for the expense of acquiring information about the issuing firm. The results indicate a significant and positive relationship between the amount of the offering relative to the tangible assets of the firm, as a proxy for information costs, and the initial return of unseasoned equity. Segmenting the sample by initial public offerings of leveraged buyouts, which have lower information costs, results in less underpricing than a comparable sample of other initial public offerings. Furthermore, the choice of the stock exchange where the

leveraged buyout's shares will trade has no significant impact on price performance.

When secondary shares are a part of the issue, the initial return is lower than in offerings without insider participation. Unlike primary offerings where the difference between the offer price and the underlying value of the security is borne by all shareholders, inside sellers bear the full cost of underpricing through the shares they sell in the initial public offering. For this reason, there is a personal incentive for the insiders to minimize underpricing. The results indicate a negative relationship between the cost of information and the degree of insider participation.

Finally, evidence is provided in support of the hypothesis that underwriters are indifferent between issuing firms with high information costs and those with low information costs as long as the gross spread compensates them for the increased cost of due diligence.

CHAPTER 1 INTRODUCTION

Recent academic research on initial public offerings has focused on the substantial returns to investors during the first day or month of seasoning and the various reasons for underpricing. Since this undervaluation appears to be consistent over time, it is important to ask why firms allow their shares to be sold at less than intrinsic value.

The offering process by which a privately-held company becomes publicly traded involves three distinct participants: the issuing firm, the underwriter and the investor in the initial public offering. The objective of the firm is to obtain the maximum price per share while allowing the issue to be fully subscribed. The underwriter, on the other hand, must make a tradeoff between satisfying the owners of the issuing firm and fulfilling the needs of its institutional customers. There is an incentive for the investment banker, however, to underprice the unseasoned equity issue in order to minimize its risk exposure and to develop satisfied, loyal customers. Because many initial public offerings are distributed on a firm commitment basis, underwriters may be exposed to large losses if the issue is unsuccessful. A prolonged offering process could result in the substantial

loss of revenue as well as the possible loss of investment capital. Therefore, the faster the securities are sold, the quicker the underwriter can realize a return on its capital and minimize any potential damage to its financial position. While setting a price that fully subscribes the issue quickly may be in the best interest of the underwriter, it must act within competitive constraints since consistent underpricing over time will undermine the ability of the underwriter to obtain new equity-issuing clients.

Investors, on the other hand, expend resources acquiring information on the issuing firm to assess the underlying value of the initial public offering. In a theoretical framework, Rock (1986) hypothesizes that underpricing is due to the cost of acquiring information about the firm's prospects. The higher the cost of information, the larger must be the return to investors to compensate them for the additional time and resources needed to become knowledgeable about the true value of the firm. Within this framework, the objective of this study is to empirically examine the relationship between the cost of information and initial returns to shareholders. Specifically, the main goal throughout Chapters 4, 5 and 6 is to test the hypothesis that the higher the cost of acquiring information, the greater will be the initial return associated with the offering.

Chapter 2 summarizes the literature, to date, for both the existence and rationale for underpricing in initial public offerings.

In Chapter 3, a descriptive analysis of initial public offerings from 1983 to 1987 is presented. In particular, mean statistics on offering and firm characteristics are computed on a yearly basis.

The relationship between the cost of information and initial returns is presented in Chapter 4. Using the amount of the offering relative to the tangible assets of the firm as a proxy for information, the hypothesis that the higher the cost of information, the greater the underpricing of the issue is tested. Furthermore, the sample is segmented by initial public offerings of leveraged buyouts. Since leveraged buyouts have a lower cost of information than other unseasoned equity, the return to investors in this type of offering should be lower than in other similar initial public offerings. In addition, the impact on post-offering price performance of the choice of stock exchange where the securities of the leveraged buyouts will trade is examined.

Chapter 5 compares the initial returns of offerings with and without secondary shares. In this case, inside sellers have a personal incentive to mitigate underpricing through the dissemination of information. Therefore, initial public offerings with secondary shares should have less underpricing than issues without inside sellers. Likewise, the extent of insider participation should be negatively correlated with the cost of information.

The influence of information costs on underwriter activity is demonstrated in Chapter 6. As long as the investment banker is compensated for bearing the cost of

information, it should be indifferent between firms with high information costs and firms with low information costs. The total amount of underwriter activity should have no correlation with the cost of information but the gross spread charged by the investment banker should be positively related to information costs.

Finally, Chapter 7 concludes the study.

CHAPTER 2 LITERATURE REVIEW

The main focus of the economic literature on unseasoned equity issues primarily has been composed of two interrelated but distinct areas: 1) the degree of underpricing associated with an initial public offering and 2) the theoretical justifications for underpricing.

The general consensus on the degree of underpricing has been that during the first day or month of seasoning investors are able to earn significant abnormal rates of return. These results are robust to differing complexities of methodology.

Among the first researchers to study investor experience with new stock issues were Reilly and Hatfield (1969). The authors examined 53 unseasoned issues from December 1963 to August 1964 and from January 1965 to June 1965. The analysis was conducted using both a short- and long-term time horizon. The short term consisted of both the first and fourth Friday following the offering, while the long term was the Friday after one year of seasoning. By comparing the returns on the securities to the Dow Jones Industrial Average and the National Quotation Over-the-Counter Industrial Average, the authors found that over 50% of the new issues outperformed both market indices on the first Friday subsequent to the

offer date. In addition, the average investor's losses relative to the market were small in comparison to the relative gains. In other words, the downside risk in these new issues was slight but the upside potential was quite high.

The results for both the fourth Friday following the offering and the Friday one year after indicated a market adjustment to the underpricing. The number of new issues outperforming the overall market, however, was not significantly different from that expected under random selection.

Shaw (1971) upheld Reilly and Hatfield's results using Canadian stocks. By using a performance index, he concluded that the market for initial public offerings is efficient in the long run.

McDonald and Fisher (1972) extended Hatfield and Reilly's results by computing the average excess returns on the new issues for the time period 1969 to 1970. The authors adjusted for movements in the market by subtracting the return on the National Quotation Over-the-Counter Industrial Average from the return on the stock one week after the offering to yield an average abnormal return of approximately 28%.

Ibbotson (1975) circumvented the problem of risk adjustment by estimating the systematic risk of new issues on portfolios of initial public offerings. Unlike seasoned issues in which risk is measured as the security's relationship to the market via beta, initial public offerings

have no previous price history. Ibbotson formed portfolios of new issues with comparable seasoning and offering prices greater than \$3.00 and estimated the beta of the entire portfolio over time. A one month holding period model measured the performance of one stock portfolios that consisted of different stocks each month. In this case, one month new issue and market return pairs were collected for each stock in the portfolio in different calendar months. Each of these pairs had identical seasoning and could therefore form a vector of returns such that covariances with the market was estimated. Ibbotson found an average return over the first month of seasoning of 11.4%. In addition, his results for the aftermarket performance of initial public offerings indicated that there were few departures from efficiency after the second month of seasoning.

Ritter (1984) documented the existence of a "hot issue" market in 1980 in which the first trading day return to shareholders of initial public offerings was 48.4%. A later paper by Ritter (1987) examined the costs of going public by the type of underwriting contract employed in the offering process. The author found that best efforts contracts had an average initial return of 47.78% while firm commitment contracts had a lower average return of 14.80%.

Two recent articles by Miller and Reilly (1987) and Chalk and Peavy (1987) have examined the price performance of IPOs on a daily basis. Both papers found a significant positive rate of return on the first trading day of the offering.

In the Miller and Reilly paper, no evidence of substantial returns following the initial trading day were documented. Their sample only considered IPOs, however, with an offering price greater than \$1.00. Chalk and Peavy, on the other hand, placed a heavy reliance on penny stocks in their sample. The authors found a significant return in the second day of trading but none of the daily average returns were significant from day three to day 190.

The following table summarizes the various studies to date on the existence of underpricing in the initial public offering market.

Table 2-1
Summary of Average Returns For
Initial Public Offerings

Study	Type of Return	Mean Return	Time Period
Reilly & Hatfield (1969)	Friday after offering	9.9%	12/63-9/64 1/65-6/65
McDonald & Fisher (1972)	First Week	28.5%	1st Qtr 1969
Ibbotson (1975)	First Month	11.4%	1960-1969
Ritter (1984)	Monthly in 1960s Daily in 1970s & 1980s	18.8%	1960-1982
Ritter (1987)	First Day	26.48%	1977-1982
Chalk & Peavy (1987)	First Day	21.65%	1975-1982
Miller & Reilly (1987)	First Day	9.87%	1982-1983

The existence of abnormally high initial returns to investors in initial public offerings has been well

documented. The literature dealing with the various factors that influence underpricing is more recent and focuses on the economic rationale for the large increase in price.

Logue (1973) measured the influence of 10 variables on the short-run performance of 250 new issues from 1965-1969 relative to a broad-based index. Using a regression equation in which the dependent variable was the first day return relative to the National Quotation Bureau's Over-the-Counter Index, the author examined the effect of the following variables on performance:

1. Competing Issues: A large number of new equity sales in the issuing month had a positive but statistically insignificant impact on performance.
2. Market Ebullience: There was a significant positive association between performance and past market optimism as measured by the Department of Commerce Diffusion Index of common stock prices.
3. Speculative: The Securities and Exchange Commission requires prospectuses of new issues that are riskier to carry the label "speculative." This variable was hypothesized to be positive but resulted in an insignificant coefficient.
4. Cash Compensation: If the underwriter's compensation is large, the degree of cost and risk is lower for IPOs which should lead to less underpricing. The variable was nearly significant and impacted performance negatively.
5. Noncash Compensation: Stock options, as part of the compensation package, should increase the return of a new issue. However, Logue found its influence to be negligible.
6. Total Dollar Value of Offering: A statistically significant negative relationship between the size of the offering and performance was indicated.
7. Secondary Issue: The number of secondary shares issued as a percentage of the total number of shares being offered was significantly negative.

8. Debt Retired: If the amount of debt retired is large in relation to the amount of funds the firm wishes to raise, it is hypothesized that underwriters may take advantage of the firm's greater need of capital. Although hypothesized to be positive, this variable was slightly negative and insignificant.
9. Underwriter Prestige: Logue hypothesized that issues underwritten by prestigious underwriters would have lower performance than those underwritten by less prestigious underwriters. The variable by itself was not significant. However, when the issues were segregated by type of underwriter and the regressions re-run, the influence of different variables on performance was evident. Prestigious underwritten issues were more influenced by the secondary issue percentage while the non-prestigious firms' performance seemed to be most related to competing issues.
10. Risk: The risk of an issue was defined as the standard deviation of weekly prices and its influence on performance was insignificant.

The attempt by Logue to explain the high abnormal returns associated with initial public offerings was largely unsuccessful. The majority of the variables either were not significant or did not correspond to the theory hypothesized by the author. In addition, the motivation for including these variables and not others, for example, firm characteristics, is unclear. However, this paper was the first of many to explore the factors influencing the price performance of IPOs.

In a theoretical framework, Rock (1986) presented a model in which informed and uninformed investors participate in the IPO market. The informed investors are assumed to have perfect information regarding the realized value of the issue. Therefore, these investors will not participate in unseasoned new issues whose offering price is greater than the underlying value of the stock. In such a model,

uninformed participants in the market face an adverse selection problem. If the issue is underpriced, both informed and uninformed investors will take part in the offering process, each receiving some portion of the total issue. (If the demand for the shares is greater than the amount of the offering, the issuer cannot increase the offer price. Therefore, the issue is allocated on the basis of quantity rationing rather than on increasing the price to a level which equilibrates supply and demand.) On the other hand, if the issue is overpriced, only uninformed individuals will be willing to purchase shares and they will be allocated 100% of the offering. Consequently, for uninformed investors, the probability of receiving an underpriced order is less than the probability of receiving an overpriced order. In this case, uninformed investors face a winner's curse: if they receive an order for an IPO, there is a high probability that the issue will be overpriced and the return will be negative. Hence, uninformed investors will only participate in initial public offerings if the expected return conditional upon receiving an order is nonnegative. Therefore, on average, issuers will underprice their shares.

One implication of the model, as indicated by Ritter (1984) and Beatty and Ritter (1986), is that the greater the uncertainty surrounding the issue, the greater should be the underpricing. Alternatively, underpricing can be viewed as compensation to informed investors for acquiring information in which the higher the cost of information the greater should be the initial return of the issue.

Various studies have empirically examined the validity of Rock's argument by using a proxy for the ex ante uncertainty and cost of information surrounding an initial public offering. Ritter (1984) employed the aftermarket cross-sectional standard deviation of first day returns as a measure of the issue's risk. Issues were broken into standard deviation categories in which the corresponding initial return increased as the standard deviation increased. This methodology considered only an absolute measure of dispersion without acknowledging that in a relative sense, the mean return will increase as the standard deviation increases. Therefore, using a statistic that controls for increases in the mean, such as a coefficient of variation, may provide more meaningful results.

Beatty and Ritter (1986) applied the number of uses of proceeds disclosed in the SEC prospectus and the reciprocal of the gross proceeds as measures of ex ante uncertainty. The SEC requires firms that are considered speculative to provide additional information in the uses of proceeds section of the registration statement. The results indicated a positive relationship between the number of proceeds listed and the degree of underpricing. One weakness of the sample is that it contains firms that disclose no uses of proceeds, "blank check" offerings. These type of issues can be considered quite speculative by the SEC and the issue concerning the non-disclosure of uses of proceeds is currently under deliberation by the Commission.

The second proxy for uncertainty used by Beatty and Ritter was the reciprocal of the gross proceeds. This variable was used to capture the empirical regularity that smaller firms are more speculative than larger firms. The results exhibited evidence of a significant positive relationship between the size of the offering and underpricing.

Slovin and Young (1986) hypothesized that a relationship with a bank reduces the ex ante uncertainty surrounding an initial public offering. The authors argued that the bank expends resources to acquire information about the company and tends to maintain relationships only with those firms that meet specific financial standards. In addition, the ongoing nature of the interaction between the bank and the firm ensures that some monitoring of the company's activities is present. Under such a scenario, the presence of a banking relationship tends to signal favorable information to the marketplace and thereby lessen the magnitude of the price increase. The author's results demonstrated a significant negative association between the presence of bank and/or lines of credit and initial return.

Muscarella and Vetsuypens (1987) used the age of the firm, in months, as a proxy for the amount of information available about the firm. Older, more established firms tend to have a greater availability of information and less risk than younger, less stable firms. Utilizing the number of months since incorporation as a proxy for the age of the

company yielded a statistically significant negative association between the age of the firm and initial return.

In order to test the level of informed investor activity in initial public offerings, Carter and Manaster (1988) used the reputation of the underwriter as a proxy for the cost of information. Low risk firms signal their risk characteristics to the market through their choice of underwriter. Since reputational capital to underwriters is costly, the incentive to falsely signal is mitigated by a loss in market share to the underwriter. In order to establish the level of reputation, the authors ranked underwriters by their position in the tombstone advertisement and used this classification as the independent variable in a regression equation. When the dependent variable was the variance in return from the offering price to the secondary trading price two weeks later, the coefficient on the underwriter reputation variable was negative and significant. This result is consistent with Logue (1973) indicating that prestigious underwriters are reluctant to undertake riskier IPOs.

The research on the magnitude of underpricing during the first month of seasoning unanimously indicates substantial initial returns which appear to dissipate after the first two trading days. The economic factors that influence the degree of the price increase are numerous but are related to the cost of acquiring information about the firm and the ex ante uncertainty surrounding the issue.

CHAPTER 3 DATA AND DESCRIPTIVE STATISTICS

Source and Description of Data

Data on initial public offerings (IPOs) for the years 1983 through September 1987 was compiled from the Investment Dealers' Digest Corporate Database (IDD). Investment Dealers' Digest only reports initial public offerings that are underwritten by firm commitment contracts. The database includes firm, offering and underwriting characteristics for 2,277 companies.¹ Eliminated from the sample are firms that have unit offerings, bank stocks and companies that did not trade in the Over-the-Counter (OTC) market.² Unit offerings are excluded because these IPOs commonly contain warrants to purchase additional shares at some future date. The valuation of warrants complicates the issues involved in explaining underpricing and, therefore, will not be used in this paper. Banks are regulated companies that have specific restrictions on their operations and capital structure. In order to provide as much homogeneity as possible among the firms in the sample, bank stocks are deleted from the database. Finally, the exchange on which an IPO trades may convey information to investors in the form of monitoring activities by the market. While this result in itself may provide an interesting hypothesis, limiting the sample to

firms which trade Over-the-Counter will standardize the information set available about the companies inherent in the exchange where their securities trade. After removing bank stocks, unit offerings and non-OTC traded securities, the database contains 1,510 firms.

Stock prices for the first recorded trading day and the twenty-first trading day are compiled from Standard and Poor's Daily Stock Price Guide: Over-the-Counter.

Descriptive Statistics

In order to examine the magnitude of the returns to investors in initial public offerings it is necessary to compute returns for the first trading day and the twenty-first trading day. Initial returns on the i th security are defined as

$$R_{i,1} = (P_{i,0} - P_{i,1})/P_{i,0}$$

where $P_{i,0}$ = the offering price of the i th firm and
 $P_{i,1}$ = the first recorded closing or bid price for the i th firm.

Twenty-first day returns are computed in a similar fashion as initial returns except these returns are adjusted for market movements. The return on the market is calculated from the NASDAQ Composite Index as quoted in the IDD database. The return on the OTC market over the 21 day time period t is defined as

$$R_{m,t} = (I_{t,0} - I_{t,21})/I_{t,0}$$

where $I_{t,0}$ = level of the NASDAQ index a beginning of time t
and $I_{t,21}$ = level of the NASDAQ index at end of time t .

The market adjusted twenty-first day return is

$$R'_{i,21} = R_{i,21} - R_{m,t}$$

where $R_{i,21}$ = the twenty-first day return on the i th firm and
 $R_{m,t}$ = the return on the market over the same period
as $R_{i,21}$.

The mean initial return, as indicated in Table 3-1, for the entire sample of 1,510 firms is 8.77% and the market adjusted twenty-first day return is 10.14%.³ The average amount offered is \$15.95 million while the mean assets and debt of the IPO firms are \$66.87 million and \$42.4 million, respectively.

Table 3-1
Descriptive Statistics for IPOs by Year^a

Year	Number of Offers	Initial Return	21st Day Return	Amount Offered	Assets	Debt
1983	478	11.67%	14.94%	17.48	49.68	44.58
1984	200	4.14%	4.13%	9.97	40.01	25.14
1985	208	8.80%	10.03%	14.26	108.41	48.87
1986	383	7.44%	8.28%	17.17	57.62	37.55
1987	241	8.88%	8.59%	17.37	103.72	53.42
TOTAL	1510	8.77%	10.14%	15.95	66.87	42.40

^aAmount offered, asset and debt figures are in millions of dollars.

Historically, initial public offerings have occurred in waves. Ritter (1984) documented 1980 as a "hot issue" market in which an abnormally large number of firms went public with corresponding high returns on the first day of seasoning. As shown in Table 3-1, the year 1983 is also a "hot issue" market with over two times the number of firms issuing unseasoned equity as in 1984, 1985 or 1987. In addition the

initial return of 11.67% and the twenty-first day return of 14.94% are higher than in any of the following years.

In 1984, IPOs are considerably smaller and exhibit a lower degree of underpricing as compared to other time periods in the sample. The average size of firms going public is approximately \$40 million and the amount offered of \$9.97 million is almost half of that issued in 1983.

Table 3-2 illustrates the number of issues for each year that exhibited positive, negative or zero returns on the initial day of trading.

Table 3-2
Number of Issues That Experienced Positive
Negative or Zero Returns 1st Day Returns^b

Year	IPOs With Positive 1st Day Return	Mean Return	IPOs With Negative 1st Day Return	Mean Return	IPOs With Zero 1st Day Return
1983	279 (58.37%)	21.54%	89 (18.63%)	-4.80%	110 (23.01%)
1984	84 (42.00%)	12.16%	25 (25.00%)	-3.87%	66 (33.00%)
1985	133 (63.94%)	14.79%	36 (17.31%)	-3.77%	39 (18.75%)
1986	213 (55.61%)	15.41%	93 (24.28%)	-4.62%	77 (20.11%)
1987	140 (58.09%)	16.37%	49 (20.33%)	-3.05%	52 (21.58%)
TOTAL	849 (56.23%)	17.16%	317 (20.99%)	-4.22%	344 (22.78%)

^bPercent of total number of firms in parentheses.

Approximately 56% of the firms going public from 1983 to 1987 experience an increase in price on the first trading

day. The remaining IPOs are split between no change in price, 22.78%, and a decline in value, 20.99%.

The data in the above table is consistent with Rock's argument that uninformed investors have some probability of receiving overpriced issues and that, on average, returns to uninformed investors are nonnegative. A large percentage of IPOs are either overpriced or exhibit no price change on the initial day of trading.

In contrast to the "hot issue" market of 1983, the year 1984 has a lower return and a higher proportion of IPOs that experienced an initial decline or no change in price. The lower percentage of firms that have increases in value in 1984 partially accounts for the small initial return shown in Table 3-1.

One indication of the demand for securities in the IPO market is how many firms issue equity below, above or within the file range of offering prices quoted in the preliminary prospectus. Firms are reluctant to adjust the number of shares offered if demand changes since a modification in this variable influences the dilution of the inside shareholders. Unlike other economic markets, the offering price cannot be increased once the offer is effective (i.e. in the final prospectus) to take advantage of a high demand for the security. In contrast, if demand for the issue is low, the offering price can be lowered from that disclosed in the preliminary prospectus. Table 3-3 illustrates the average initial return and twenty-first day return for firms whose

offering price falls above, within or below the file range in the preliminary prospectus.

Table 3-3
Average Initial and 21st Day Returns
Of Firms With Offer Prices
Above the File Range

Year	Initial Return	21st Day Return	Percent of Firms
1983	25.69%	29.19%	17.36%
1984	6.32%	6.15%	6.50%
1985	16.67%	15.23%	6.25%
1986	17.61%	18.57%	11.23%
1987	17.27%	18.93%	13.28%
TOTAL	20.33%	22.31%	12.19%

Average Initial and 21st Day Returns
Of Firms With Offer Prices
Within the File Range

Year	Initial Return	21st Day Return	Percent of Firms
1983	12.25%	16.11%	58.37%
1984	8.11%	10.42%	41.50%
1985	9.90%	9.93%	71.63%
1986	8.32%	9.78%	65.79%
1987	10.53%	11.74%	62.24%
TOTAL	10.12%	12.13%	60.46%

Average Initial and 21st Day Returns
Of Firms With Offer Prices
Below the File Range

Year	Initial Return	21st Day Return	Percent of Firms
1983	.28%	1.96%	24.27%
1984	.69%	-1.08%	52.00%
1985	3.03%	8.92%	46.00%
1986	-.01%	-.91%	22.98%
1987	.17%	-5.18%	25.58%
TOTAL	.61%	.35%	27.35%

On average, firms that have an offer price that is greater than the preliminary file range have substantially higher initial returns than those that must decrease the

offer price to stimulate demand. In this case, the underwriter foresees a stronger demand than was previously anticipated and raises the offer price before the firms goes public. This result is upheld in the aftermarket as shown by the higher twenty-first day returns. Notice that over 50% of the unseasoned issues in 1984 have offering prices below the file range. In other words, 1984 can be considered a "cold issue" market for initial public offerings.

Since there is a large discrepancy between the performance of 1983 IPOs and subsequent years, the data is broken into quarterly returns in order to ascertain when the "hot issue" market begins and ends. Initial and twenty-first day returns, as shown in Figure 3-1, are not highest when the volume of firms entering the IPO market is highest. The greatest amount of underpricing occurs in the second quarter of 1983 with an average initial rate of return of 27.98%. The last quarter of 1983 had a first day return of only 3.82%. Ritter (1984) has found that since 1960, there has been a tendency for volume to increase after a period of high initial average returns.

Figure 3-2 shows the number of firms going public over time. There is a substantial increase in IPOs throughout 1983 with a large decline in the first quarter of 1984. Only 11.5% of the total number of IPOs for 1983 went public in the first quarter of that year. The majority of firms entering the market did so in the latter half of 1983. The number of firms issuing unseasoned equity continues to decline after the first quarter of 1984 but at a much smaller rate until

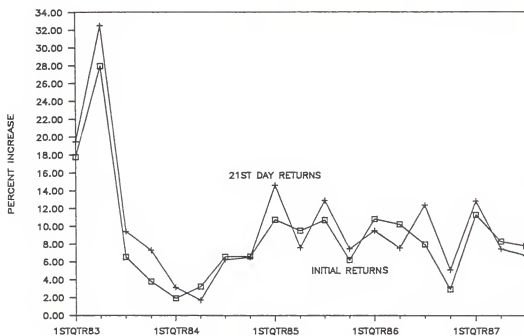


Figure 3-1
Comparison of Initial and 21st Day Returns
By Quarter

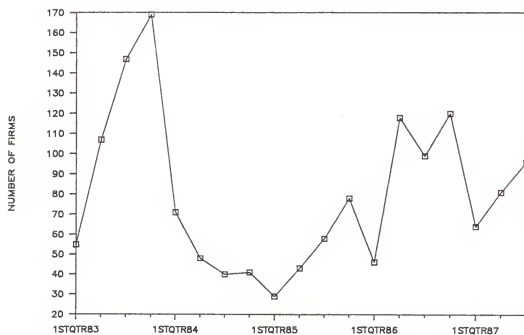


Figure 3-2
Number of Firms Going Public
By Quarter

the second quarter of 1985 at which time a gradual increase occurs.

When initial and twenty-first day returns are broken into quarterly data, it becomes apparent that the nature of the IPO market is somewhat cyclical, at least in the case of the number of firms going public. In addition, the pattern of returns is not perfectly correlated with the level of firms issuing IPOs over time, although the usual lead-lag relationship exists.

An additional classification of initial public offerings is whether or not the issue is syndicated. Syndication spreads the risk as well as the profits of subscribing the issue among a large number of underwriters. When the issue is not syndicated, the lead manager bears the entire risk of the offering but also receives all of the underwriter compensation.

To illustrate, consider the October 20, 1987, non-syndicated U.S. initial public offering of British Petroleum.⁴ The lead managers in the U.S. for the issue were Goldman Sachs, Morgan Stanley, Salomon Brothers and Shearson-Lehman. Unlike traditional IPOs, the pricing meeting was held on October 14 rather than on the day before the offer went effective. The underwriters set an offering price that was approximately 6% lower than the currently traded British stock value and guaranteed this amount, minus the gross spread, to the issuing company. Unfortunately, on October 19, the world market crashed, leaving the underwriters exposed to large losses. Despite heavy lobbying by the U.S.

underwriters to have the offer withdrawn, British Petroleum went public at an offer price that was lower than the proceeds promised to the company. By not syndicating the offer, the underwriters gambled that the offering would be successful and the proceeds would not have to be divided among a large number of investment bankers. The underwriters lost a substantial amount of money by setting the offer price far in advance of the issue date as well as not spreading the risk among other investment bankers.

Table 3-4 compares the mean offering and firm characteristics between syndicated and non-syndicated issues. Smaller issues appear to be associated with offers that are not syndicated. This is in contrast to the British Petroleum IPO which was to be the the largest initial public offering in history. Since the non-syndicated issues have a smaller offering amount, the potential loss to the underwriter is also smaller. Likewise, small offerings may be more difficult to syndicate since the number of shares allocated to each investment banker will then be small. This, in turn, lowers the profit each underwriter in the syndicate can make from the offering. The risk of an non-syndicated offering is also low when compared to the underwriter's entire portfolio of initial public offerings. The investment banker can spread the risk of a non-syndicated issue by diversifying the offering with other syndicated IPOs.

Table 3-4
Difference in Means Between Syndicated and
Non-Syndicated IPOs

Variable	Syndicated		T-Statistic
	Yes	No	
Number of offers	1266	244	
Initial return	6.48%	20.65%	7.39
21st day return	6.93%	26.71%	6.62
Undewriting spread	7.64%	9.34%	19.43
Assets (millions)	75.14	23.46	3.61
Amount offered	17.98	5.40	16.71
Offering price	\$10.75	\$5.61	10.29

Summary

The descriptive statistics for firms going public from 1983 to 1987 indicate considerable variation in initial returns, firm qualities and offering characteristics through time. The year 1983 has substantially higher initial returns than in any other year in the sample. In contrast, 1984 can be considered a "cold issue" market in which offering prices were lowered to stimulate demand. Finally, issues that are not syndicated are characterized by higher initial returns and gross spreads along with lower offering amounts, prices and asset sizes in comparison to syndicated offerings.

Notes

1. See Appendix A for a brief description and list of variables in the Investment Dealer's Digest Database.
2. This restriction is lifted when discussing leveraged buyouts in Chapter 4. Twenty-one firms in the LBO study trade on the New York Stock Exchange or the American Stock Exchange and are only used in the LBO comparison portion of Chapter 4. The remaining portion of the dissertation is confined to OTC traded firms.
3. These are not annualized returns.
4. The information on the IPO of British Petroleum was compiled by Jay Ritter.

CHAPTER 4
THE COST OF INFORMATION AND INITIAL RETURNS OF
INITIAL PUBLIC OFFERINGS

Introduction

The academic literature on the price performance of initial public offerings has unanimously demonstrated substantial first day returns to investors in unseasoned equity. The objective of this chapter is to examine the rationale for underpricing by empirically testing the implication of Rock's (1986) model that the higher the cost of information the greater the initial return to investors in IPOs. In this case, the amount of the offering relative to the tangible assets of the firm is used as a proxy for information. The results provide evidence of a statistically significant relationship between underpricing and the cost of information. A comparison of previous research using the percent of tangible assets offered as a representative of the cost of information indicates a notable contribution to the study of underpricing in initial public offerings. Segmenting the sample by IPOs of leveraged buyouts (LBOs) who have lower information costs, yields a statistically lower initial return than other initial public offerings in the same cost of information category. Finally, the choice of exchange where the leveraged buyout's securities trade after

the initial public offering does not appear to affect the amount of information available about the firm.

Rock theoretically explains the increase in price following an initial public offering by using the cost of information as a rationale for underpricing. In the model, two types of investors are active in the IPO market: informed and uninformed. Informed investors expend resources to acquire information about the expected performance of the firm and will only purchase issues whose offer price is below the subsequent trading value. If the offer price is above the underlying value of the security, then uninformed investors will be the sole participants in the issue. In the underpriced scenario, rationing occurs since both types of investors will wish to obtain the security. Therefore, uninformed investors face a winner's curse: if their order for an IPO is filled, there is a high probability that the issue is overpriced and the return will be negative. In order to persuade uninformed investors to take part in an initial public offering, it is necessary that on average, issuers underprice their shares. Hence, the mean return to uninformed investors is nonnegative.

One implication of Rock's model is that issues which require a higher expenditure in information cost to assess the true underlying value of the company will have higher initial returns. In other words, underpricing can be viewed as compensation to informed investors for acquiring information.

Although other researchers, notably Ritter (1984) and Beatty and Ritter (1986), have examined the effects of uncertainty on the initial returns of IPOs, only two working papers, Slovin and Young (1986) and Muscarella and Vetsuypens (1987), specifically explore the effects of information costs on underpricing.

Slovin and Young test Rock's model by using the existence of a banking relationship as a proxy for acquiring information. The authors hypothesize that "the presence of bank relationships serves to sort firms under conditions of asymmetric information in an effective and low cost manner."¹ The bank expends resources to acquire information about the company and tends to continue maintaining relationships with those firms that meet specific financial standards. Although Slovin and Young contend that the presence of bank debt reduces the ex ante uncertainty of an IPO, the bank, like an investor in the initial public offering, must make a trade-off between the cost of acquiring information and expected return. Firms for which the cost of information outweighs the risk and monitoring expenses of the bank will not be involved in banking relationships. Therefore, the presence of bank debt will also serve to signal the risk/return trade-off to the investor of acquiring information in evaluating the firm independently. The results indicate a statistically significant negative relationship between the presence of bank debt and initial returns.

Muscarella and Vetsuypens (1987) use the age of a firm as a substitute for the availability of information. Material

on firms with longer operating histories will be easier and less costly to obtain than on start-up companies. Using the number of months since incorporation as the age of the firm, the results support the hypothesis that older, more established firms have less underpricing than younger, less stable firms.

One obstacle to testing Rock's model is identifying the cost of information to investors in initial public offerings. Explicit measures of actual information costs are difficult, if not impossible, to determine. The main contribution of this paper is to examine the price performance of firms using the amount of the offering relative to the tangible assets of the issuer as a proxy for the cost of acquiring information and comparing these results with previous research. Firms that issue substantially more equity than the underlying tangible assets are harder to value than firms who are asset intensive. Companies with a high percentage of assets offered should have corresponding high returns. Similarly, firms such as leveraged buyouts (LBOs) have inexpensive and readily available information and consequently, should experience lower underpricing. Leveraged buyouts have two advantages in information acquisition: 1) they were previously either publicly held companies or subsidiaries of public companies and 2) LBOs have received a great deal of popular press. This study will test the hypothesis that initial returns for leveraged buyouts will be less than other initial public offerings in the same percent of assets category since the cost of acquiring information is lower.

Data

The data on all initial public offerings from 1983 to 1987 was compiled from Investment Dealers' Digest Corporate Database and is limited to firm commitment offerings. After eliminating unit offerings, bank stocks and firms that did not trade Over-the-Counter, 1,510 offerings remain.

Eighty-eight leveraged buyouts that subsequently went public were identified from two sources: Ferenbach (1987) and a study by Kidder, Peabody and Company. Each of these companies is also included in the IDD database. Unlike the general sample of IPOs, 25 leveraged buyouts traded on a major exchange such as the New York or American Stock Exchanges. Four firms are deleted from the sample for two primary reasons: 1) they contain unit offerings (Sun Distributors and Schult Homes) or 2) no subsequent trading information is available after the offering (Harris Graphics and Portage Industries). The final sample of leveraged buyouts contains 84 firms.²

Initial and twenty-first day trading prices were gathered from Standard and Poor's Daily Stock Price Guide for Over-the-Counter, American Stock Exchange and New York Stock Exchange listed securities.

Empirical Results

Percent of Assets Offered

Investors in an initial public offering have a disadvantage as compared to those in seasoned issues in determining a fair value for the security since previous

trading prices do not exist.³ In order to properly assess the true worth of the firm's shares, informed investors expend resources to acquire information about various aspects of the company's earnings, assets, operating history, etc.

The tangible assets of the firm play an important role in determining value since the investor can readily identify the worth of plant and equipment. Quantifying the monetary benefit to intangibles such as patents and human capital is a far more arduous task. Securing information regarding intangibles is both time-consuming and expensive in comparison to an asset-intensive firm. According to Rock's model, the more prohibitive it is to obtain information about the firm's activities, the more the investor needs to be compensated through the underpricing of the security. Under such a scenario, firms that offer a greater amount of equity relative to the tangible assets in place should have higher initial returns than firms with lower offerings relative to assets. Table 4-1 gives mean offering and firm characteristics by the category of percent of assets offered as defined as the offering amount divided by the assets of the firm.

The mean ratio of offering amount to the assets of the firm is 313% for the entire sample.⁴ The first trading day return increases substantially as the category of percent of assets offered increases. This is consistent with the hypothesis that the higher the cost of information, as measured by the amount of the offering relative to the assets

of the firm, the greater is the underpricing of the initial public offering.

Ritter (1988) has shown that the gross spread charged by the underwriter rises as the amount of the offering increases due to economies of scale. Table 4-1 supports that conclusion.

Table 4-1
Statistics By Amount Of Offering
Relative To the Assets Of
the Issuing Firm^a

Amount/Assets	Initial Return	Assets	Amount of Offering	Price	Gross Spread
0 - 49.9% (456)	4.90%	187.03	19.18	\$11.25	7.42%
50 - 99.9% (338)	6.52%	22.26	15.84	\$10.07	7.74%
100 - 199.9% (303)	7.60%	11.31	15.59	\$ 9.75	7.90%
200 - 399.9% (183)	15.23%	5.29	13.95	\$ 9.39	8.42%
> 400% (177)	19.48%	1.28	9.50	\$ 6.55	9.23%

^aAssets and amount of offering are in millions of dollars.
Number of firms in each category are in parentheses.

As the amount of the offering rises, so does the corresponding gross spread. Economies of scale, however, account for only a portion of the increase in gross spread as the percent of assets increase. The argument that investors must be compensated for incurring the costs of information can be applied to the underwriter as well. The cost of information to the underwriter will be at least as great as the cost to the investor since the underwriter must perform due diligence investigations into the activities of the firm in order to certify that the disclosure in the offering

prospectus is accurate. Although the underwriter's compensation is limited to the gross spread, they may be sued for up to the full offering price of the issue if there are any material omissions in the prospectus and the stock price declines after the offering. Therefore, if the cost of information is higher in firms with few assets relative to the offering amount, the underwriter will charge a larger gross spread to compensate for the increased cost of certification. Hence, the increase in gross spread as the percent of assets increase can also be attributed to the higher cost of information to the underwriter of the IPO.

Finally, the price of the issue declines as the percent of assets offered increases.

To test that hypothesis that firms with a higher cost of information will have greater initial returns, a regression analysis is employed using initial returns as the dependent variable and the natural log of the ratio of the amount of the offering to the assets of the firm as the independent variable. Table 4-2 shows the results of the analysis.

Table 4-2
Estimate of the Regression Coefficients on
Initial Return^b

Constant	Amount/Assets	Adj. R ²	F Statistic	N
0.0885 (17.94)	0.0316 (9.01)*	0.0522	81.233	1456

^bT-statistics are in parentheses.

*Significant at the 1% confidence level.

The regression coefficient on the amount of assets offered is statistically significant and positive at the 1%

confidence level which is consistent with the cost of information argument.

If underpricing increases with the expense of information to investors, then it should also increase the gross spread charged by the underwriter as compensation for the additional expenditure. Table 4-3 presents the results of the regression analysis using gross spread as the dependent variable and the natural log of the percent of assets offered as the independent variable.

Table 4-3
Estimate of the Regression Coefficients on
Gross Spread^C

Constant	Amount/Assets	Adj. R ²	F Statistic	N
7.963 (262.30)	0.388 (17.80)*	0.1817	323.977	1455

^CT-statistics are in parentheses.

*Significant at the 1% confidence level.

The above table indicates that as the cost of information increases, the underwriter charges a higher gross spread to the issuing firm. The coefficient on the percent of assets offered is positive and statistically significant at the 1% level.

In order to assess the contribution of using the amount of the offering relative to the tangible assets of the firm, a comparison of this chapter's results and those of Ritter (1984) and Muscarella and Vetsuypens is conducted.⁵

Muscarella and Vetsuypens use the number of months since incorporation as the age of the firm. Unfortunately, this variable is not readily available from the dataset.

Therefore, the number of years that earnings are reported in the prospectus is used as a proxy for the age of the firm. The number of years for reported earnings ranges from zero to five years. Table 4-4 indicates the number of firms in each category of earnings history. The majority of firms lie on either end of the earnings history scale. The greatest number of firms have reported earnings that are less than or equal to one year or greater than four years.

Table 4-4
Number of Firms For Each Category of the
Number of Years Earnings Are Reported in the Prospectus

No Earnings Reported	One Year	Two Years	Three Years	Four Years	Five Years
169	360	233	158	77	513

The cost of information hypothesis as an explanation of underpricing predicts that firms with longer operating histories will have lower information costs. In other words, as the age of the firm increases the availability and cost of information increases and becomes cheaper, respectively, and so initial returns should decline.

Table 4-5 shows the results of a regression analysis using initial returns as the dependent variable and earnings history and percent of tangible assets offered as the independent variables. The regression coefficient on earnings history is significant and negative indicating that the greater the age of the firm, the lower are the initial returns. This result is consistent with Muscarella and Vetsuypens.

Adding the amount of the offering relative to the assets of the firm as an additional proxy for the cost of information results in a statistically significant coefficient on both variables thereby increasing the explanatory power of the cost of information model.

Table 4-5
Regression Analysis Comparing Muscarella and Vetsuypens
With the Percent of Assets Offered Variable^d

Constant	Amount/ Assets	Earnings History	Adj. R ²	F- Statistic	N
0.0885 (17.94)	0.0315 (9.01)*		.052	81.233	1456
0.1191 (13.02)		-0.0119 (-4.39)*	.012	19.281	1456
0.1089 (12.07)	0.0296 (8.29)*	-0.0073 (-2.70)*	.056	44.439	1456

^dT-statistics in parentheses.

*Significant at the 1% confidence level.

In order to make a comparison with Ritter's 1984 study, it is first necessary to construct cross-sectional standard deviations as a measure of ex ante uncertainty. The percent of assets variable was divided into 32 categories with an equal number of observations in each. Table 4-6 describes the range of the variables and the number of observations in each grouping.

The initial return, in Table 4-6, tends to increase as the category of amount to assets increases. The earnings history also appears to decline somewhat as the initial return increases and the percent of assets offered increases. Both of these trends support the cost of information

hypothesis, although the increase or decrease is not absolute over the range of percent of tangible assets offered.

Table 4-6
Mean Statistics By
Percent of Assets Offered Categories

Amount/ Assets	Number of Firms	Initial Return	Std. Deviation of Returns	Earnings History
< 5.0%	43	2.52%	11.01%	1.88
5.0%- 12.9%	49	4.38%	14.11%	2.94
13.0%- 18.9%	51	2.23%	8.45%	2.71
19.0%- 22.9%	43	1.77%	6.42%	3.53
23.0%- 27.9%	48	2.42%	8.84%	2.96
28.0%- 31.9%	47	2.88%	6.85%	2.91
32.0%- 37.9%	47	3.42%	1.75%	3.00
38.0%- 41.9%	41	4.93%	1.24%	3.05
42.0%- 45.9%	44	5.12%	10.00%	3.63
46.0%- 50.9%	45	4.18%	10.03%	3.16
51.0%- 56.9%	52	7.17%	15.68%	2.77
57.0%- 61.9%	41	5.53%	17.59%	3.02
62.0%- 66.9%	42	6.87%	14.18%	3.26
67.0%- 73.9%	45	3.82%	8.56%	3.98
74.0%- 81.9%	49	4.55%	13.78%	3.20
82.0%- 88.9%	43	5.50%	10.29%	3.33
89.0%- 95.9%	48	12.11%	26.10%	3.19
96.0%- 105.9%	43	3.92%	9.82%	3.58
106.0%- 116.9%	48	4.87%	10.80%	3.46
117.0%- 130.9%	48	9.14%	14.25%	3.50
131.0%- 144.9%	46	4.23%	8.67%	2.91
145.0%- 162.9%	50	8.98%	17.83%	3.34
163.0%- 181.9%	43	10.95%	19.15%	3.30
182.0%- 199.9%	41	10.79%	12.99%	2.51
200.0%- 228.9%	51	14.91%	22.42%	2.34
229.0%- 258.9%	47	13.70%	21.71%	2.96
259.0%- 323.9%	42	17.89%	37.58%	2.86
324.0%- 399.9%	43	14.70%	20.91%	2.42
400.0%- 524.9%	44	14.25%	28.10%	1.82
525.0%- 799.9%	44	18.72%	19.19%	1.45
800.0%-1574.9%	46	23.60%	30.79%	.87
>1575.0%	43	21.20%	43.40%	.42

Standard deviation, as a measure of ex ante uncertainty, does not appear to correlate as well with the percent of assets category as do the other two variables.

In order to provide a clearer picture of the correlation between these three variables, Table 4-7 illustrates the Pearson correlation coefficients between the means of initial return, percent of assets offered, earnings history and the standard deviation of initial returns.

Table 4-7
Pearson Correlation Coefficients
on Mean Statistics By Category of Percent of Assets Offered

	Initial Return	Amount/ Assets	Std. Deviation of Returns	Earnings History
Initial Return	1.000	.813*	.410**	-.743*
Amount/Assets	.813*	1.000	.523*	-.528*
Std. Deviation	.410**	.523*	1.000	-.579*
Earnings History	-.743*	-.528*	-.579*	1.000

*Significant at the 1% confidence level.

**Significant at the 2% confidence level.

All of the correlation coefficients are significant at the 1% confidence level, with the exception of the correlation between the standard deviation and mean initial return, which is significant at the 2% level. As expected, the correlation between mean earnings history and all other variables is negative. As the age of the firm increases, the cost of information declines as does the initial return and standard deviation. The mean amount of the offering relative to the tangible assets of the firm and the standard deviation of initial returns are positively correlated with each other as well as with mean initial returns. As the risk of the issue increases, as measured by standard deviation, so does the underpricing. When the cost of information rises, the

return needed to compensate investors for acquiring information rises as well.

The final comparison between the Ritter, Muscarella and Vetsuypens and this study involves the use of a regression analysis with the dependent variable being the mean initial return for each of the 32 categories of percent of assets offered. The independent variables are the standard deviation of initial returns, the mean earnings history and the mean initial return for each category. The results of the regression analysis are presented in Table 4-8.

Table 4-8
Estimate of Regression Coefficients on
Mean Initial Returns^e

Constant	Mean Amount/ Assets	Mean Earnings History	Std. Dev. of Returns	Adj. R ²	F- Statistic	N
0.0882 (14.13)	0.0333 (7.64)*			.65	58.340	32
0.1789 (10.13)		-0.0962 (-5.78)*		.51	33.397	32
0.0815 (8.20)			0.0021 (2.47)**	.14	6.074	32
0.1347 (8.51)	0.0242 (5.01)*	-0.0488 (-3.13)*		.73	42.657	32
0.0884 (13.51)	0.0338 (6.49)*		-0.0001 (-.16)	.66	28.236	32

^eT-statistics in parentheses.

*Significant at the 1% confidence level.

**Significant at the 2% confidence level.

Ritter hypothesizes that as the cross-sectional standard deviation increases so does the ex ante uncertainty of the issue. This in turn requires underwriters to underprice the

issue to compensate investors for bearing additional risk. The regression coefficient on standard deviation alone shows a statistically positive relationship between the risk of the issue and mean initial returns. As the standard deviation increases, so does the underpricing of the IPO. For the regression equation with the mean percent of assets offered as the independent variable, the coefficient is significant and positive. This result is consistent with the findings in the earlier portion of this chapter. The coefficient on earnings history indicates a statistically negative relationship between the age of the firm and underpricing as is the case in Muscarella and Vetsuypens. Each of the regression equations with a single independent variable yields significant results, the equation using standard deviation is significant at the 2% level while the equations with the mean percent of assets offered and mean earnings history is significant at the 1% level.

Including earnings history with the amount of the offering relative to the assets of the firm yields significance and the correct sign on the coefficient for both variables. However, once the standard deviation is combined in an equation with percent of tangible assets offered, the the coefficient on standard deviation becomes negative and insignificant. Therefore, the results in Table 4-8 do not support Ritter's hypothesis when combined with the cost of information argument. Using the cross-sectional standard deviation of initial returns does not add any explanatory power to the cost of information model.

Leveraged Buyouts

According to Rock, if the initial return to shareholders of initial public offerings increases as the cost of information increases, then firms for which information is readily and cheaply available should experience less underpricing. Leveraged buyouts are firms which were once either a publicly traded company or a subsidiary of one. Unlike other IPOs, there may exist previous stock price data which can be used as a benchmark for both investors and underwriters to value the company. Although major corporate restructuring occurs after a company is involved in a leveraged buyout, many of the attributes of the firm remain intact. In addition, information regarding the company exists in a variety of forms. Since the firms were once either a part of or a wholly publicly traded company, registration statements, annual reports, etc. are available through the Securities and Exchange Commission. The value of the underlying assets can be readily computed through these reports. Since leveraged buyouts have been the subject of a great deal of controversy, the method by which they are restructured and organized is obtainable through trade journals and the popular press. The traditional problems associated with valuing the firm are mitigated under such circumstances. The underwriter has an easier task of due diligence while the investor need not expend significant resources in becoming educated about the firm's prospects, capital structure and earnings capability. It is for these reasons that initial public offerings of LBOs should exhibit

less underpricing than other unseasoned equity when controlling for size and the percent of assets offered.

Table 4-9 presents the mean statistics by year for initial public offerings of leveraged buyouts.

Table 4-9
Descriptive Statistics of IPOs of LBOs
By Year^f

Year	Number of Firms	Initial Return	21st Day Return	Amount of Offering	Assets	Debt
1983	6	- 2.90%	- 3.03%	52.42	141.03	55.25
1984	1	0.00%	-11.98%	45.60	.	56.60
1985	6	2.77%	4.53%	23.90	90.78	41.50
1986	28	2.47%	2.23%	50.14	394.36	130.18
1987	43	2.13%	3.62%	51.35	180.92	131.37
TOTAL	84	1.90%	2.51%	49.00	245.13	118.49

^fAssets, amount of offering and debt are in millions of dollars.

The market for IPOs of leveraged buyouts has increased substantially during the last two years and is a large proportion of the total amount issued in 1986 and 1987. In 1986, approximately \$6.6 billion of unseasoned equity was issued of which \$1.4 billion was attributed to LBOs. During the following year, LBOs account for \$2.2 billion out of a total of \$4.2 billion offered. The large proportion of initial public offerings of LBOs in relation to all firm commitment equity offerings shows the relative importance of this type of IPO in the marketplace.

Since the information costs inherent in gathering material on the firm's future prospects is low, leveraged

buyout IPOs should exhibit significantly less underpricing than initial public offerings in general. In order to test the hypothesis that unseasoned equity of LBOs have lower initial returns than other initial public offerings, a difference of means test is utilized on all IPOs with a similar percent of assets offered.⁶ The ratio of the amount of the offering to the assets of the firm for LBOs ranges from 2.8% to 1518.8%.⁷ Five firms have missing values for the asset variable and so are deleted from the sample. In addition, the range of percent of assets is too large to make a meaningful comparison. Hence, leveraged buyouts with the amount of the offering in relation to the assets that are greater than 100% are also removed from the sample.⁸ The general IPO sample is limited to those offerings whose ratio of the amount of the offering to assets is greater than 2% and less than 100%. Table 4-10 presents a statistical comparison between the leveraged buyout sample and the general initial public offering sample.

The LBO firm, on average, is a larger firm than the typical company issuing equity for the first time. Revenue for LBOs is approximately four times higher than that of the general sample. Assets for IPOs are \$84 million while leveraged buyouts have assets of almost \$258 million. The debt of LBOs is twice that of other initial public offerings.

Since leveraged buyouts are public firms or portions thereof that are taken private, the age of these companies may also be much greater than the average initial public

offering. Therefore, the larger size of the LBOs going public is of no surprise.

Table 4-10
Mean Statistical Comparison of IPO and LBO Sample
By Percent of Assets Offered⁹

Variables	IPO Sample	LBO Sample	T- Statistic
Number of firms	735	75	
Initial return	5.09%	1.93%	3.80
21st day return	6.25%	3.57%	1.44
Underwriting gross spread	7.59%	6.83%	10.82
Amount/Assets	48.27%	30.88%	6.59
Assets (millions)	83.54	254.46	2.33
Debt (millions)	51.30	92.74	1.83
Revenue (millions)	74.38	300.47	4.62
Amount offered (millions)	16.27	38.75	5.88
Offering price	\$10.58	\$13.27	5.28
Percent of firm offered	28.63%	33.05%	3.84

⁹Percent of assets offered is defined as the offering amount divided by the assets of the firm

The initial return for the general sample of IPOs is 5.90% while initial public offerings of LBOs experience only a 1.93% increase in price. The initial returns are statistically different at the 1% confidence level. This result supports the hypothesis that IPOs of leveraged buyouts have less underpricing than IPOs in general. Twenty-one day returns, however, do not significantly differ.⁹

An additional test of the cost of information is the difference in underwriting gross spreads. As the cost of information increases to the investor, so should it increase to the underwriter. Table 4-10 indicates that the amount charged by the underwriter, holding the percent of assets offered constant, is significantly different from initial public offerings in general.¹⁰

The preceding results have indicated that initial public offerings of leveraged buyouts do not experience the same magnitude of underpricing as firms in the same category of percent of tangible assets offered. In addition, the gross spread charged by the underwriter is also significantly less than in the general IPO sample. These results are consistent with the hypothesis that firms which have a lower cost of information will have corresponding lower initial returns and underwriter gross spread.

NYSE and AMEX Exchange Listed Securities Versus OTC

The price performance of initial public offerings may also differ by the choice of the exchange where the securities will be traded since the amount of information the firm is required to disclose, in addition to the prospectus, is greater for NYSE listed securities than OTC firms.

The NYSE has the most demanding listing requirements and dictates that all firms make periodic reporting to the exchange as well as fulfilling continued listing requirements. In addition, "in selecting securities to be listed, exchange officials seek firms which are national in scope and have a major standing in a growing industry."¹¹

The AMEX is similar in fashion to the NYSE but has less stringent listing criteria. Typically, firms which list on the American Stock Exchange are smaller and younger than those on the NYSE.

Finally, the Over-the-Counter market comprises the majority of the firms going public for the first time and has the least involved standards for trading.

One role of the type of exchange is to certify the size and earnings capability of the firm. The most exacting is the NYSE, followed by the AMEX and finally, the OTC. In other words, the choice of exchange acts as a proxy for both the viability of the firm and the cost of information. Since the NYSE monitors the listed firms closely, the investor in an NYSE traded firm may not need to expend additional resources to certify the prospects of the company but may use the listing requirements as a signal of the value of the firm. Therefore, firms which trade on the NYSE should have less underpricing than firms which trade on either the AMEX or in the OTC market when controlling for size.

In order to control for size and type of firm, the sample of leveraged buyouts and the corresponding exchange is used to test the hypothesis that NYSE and AMEX listed securities exhibit less underpricing than OTC firms. Seventeen of the 84 leveraged buyout IPOs in the sample are listed on the New York Stock Exchange (NYSE) and eight on the American Stock Exchange for a total of 25 exchange-listed companies. The remaining 59 firms are traded in the Over-the-Counter (OTC) market. Table 4-11 illustrates the differences in the LBOs by where the firms are traded.

The firm characteristics differ by exchange whereby the smallest firms, \$141 million in assets, are listed on the OTC, slightly larger firms, \$156 million in assets, on the

AMEX and finally, the most sizable, \$681 million in assets, on the NYSE. When comparing offering amounts, the same ranking occurs with the OTC firms having the lowest offering amount and the NYSE companies the highest. The initial returns, however, do not significantly differ from one another. Interestingly, the AMEX has the lowest initial return of 1.38% and also the smallest mean offering price of \$11.99 even though the percent of assets offered, 1923%, is much higher than in either of the other two exchanges. The OTC firms have the lowest percent of assets offered, 34%, with the highest initial return of 2.02%.

Table 4-11
Mean Statistics of Leveraged Buyouts By Exchange

Variable	OTC	AMEX	NYSE
Number of firms	59	8	17
Initial return	2.02%	1.38%	1.75%
21st day return	3.47%	-2.55%	1.68%
Underwriting spread	6.91%	6.73%	6.38%
Amount/Assets	33.93%	1922.67%	437.48%
Assets (millions)	141.00	155.95	681.48
Debt (millions)	62.19	187.01	285.43
Revenue (millions)	243.26	278.44	593.11
Amount offered	31.97	63.34	101.34
Offering price	\$12.72	\$11.99	\$15.44

The gross underwriting spread increases as predicted with the OTC having the highest spread, 6.91%, and the NYSE the lowest, 6.38%. The difference between the NYSE and the OTC spread is significantly different at the 1% confidence level with a t-statistic of 3.10. One reason that may account for the difference is that the listing on the NYSE may allow an underwriter to sell the issue faster than securities traded

on the OTC. The liquidity of the specialist market is greater than on a broker-dealer market such as the OTC. Thus, an investor in an initial public offering may be more willing to purchase securities where the liquidity is the highest. This lessens the risk the underwriter bears in fully subscribing the issue and so decreases the gross spread.

The outcome of comparing the performance of leveraged buyouts by exchange leads to inconclusive results. Whereas the firms appear to differ in asset size, revenue and debt, the initial returns are not significantly different from one another even though the percent of assets offered differs. The inability to distinguish between diverse exchange-listed companies may be due, in part, to the small sample size associated with both the AMEX and NYSE securities.¹²

Summary

The hypothesis that firms with higher information costs have greater underpricing is supported when using the ratio of the offering amount to the tangible assets of the firm as a proxy for the cost of acquiring information. Firms with a greater percentage of assets offered have corresponding higher returns than firms whose offering amounts are small in relation to the underlying assets. A comparison with previous studies indicates a notable contribution in understanding the rationale behind underpricing. In addition, the price performance of firms for which information is inexpensive, such as the IPOs of leveraged

buyouts, indicate a lower degree of underpricing than other initial public offerings in the same percent of assets offered category. Finally, the choice of exchange listing does not statistically affect the price performance of initial public offerings of leveraged buyouts.

Notes

1. Slovin, M. and J. Young, "Bank Lending and Initial Public Offerings," unpublished working paper, University of Colorado at Denver, 1986, p. 3.
2. See Appendix B for a comprehensive list of initial public offerings of leveraged buyouts.
3. Some leveraged buyouts are an exception to this rule.
4. Fifty-five firms have missing observations on assets.
5. A reliable estimate for the amount of bank debt the issuing firm has in the balance sheet was unobtainable. For this reason, no comparison between Slovin and Young's and the percent of assets offered was conducted.
6. The LBO sample has been eliminated from comparison sample of all IPOs.
7. For a comparison of all LBOs with the entire IPO sample, see Appendix C.
8. Firms which have a missing value for the asset variable are:

Name

Child World
E-II Holdings
Liggett Group
Lily-Tulip
Tyco Toys

The outliers for the percent of assets offered category deleted for comparison with other initial public offerings are:

<u>Name</u>	<u>Amount/Assets</u>
Cedar Fair	112%
Fruit of the Loom	1519%
Charles Schwab	608%
Western Publishing Group	149%

9. The results do not change significantly when segmenting the sample by either asset size or amount offered. See Appendices D and E for the difference of means test for both of these categories.
10. Although one could argue that the difference in gross spread is due to the difference in amount offered, narrowing the category of amount offered to include only offering sizes between \$10 million and \$97 million does not significantly change the results.

Variable	IPO Sample	LBO Sample	T- Statistic
Number of firms	670	71	
Amount offered	23.88	35.15	3.81
Underwriting spread	7.60%	6.85%	3.63

11. Radcliffe, Robert C. Investment Concepts, Analysis and Strategy. Glenview, Illinois: Scott, Foresman and Company. 1982. p.57.
12. Even when the AMEX and the NYSE stocks are combined, the initial returns do not differ significantly from the OTC sample.

CHAPTER 5
THE RELATIONSHIP BETWEEN SECONDARY SHARES
AND THE COST OF INFORMATION ON THE RETURNS OF
INITIAL PUBLIC OFFERINGS

Introduction

According to Rock's model, underpricing can be viewed as compensation to investors for becoming informed. If an initial public offering contains secondary shares as a part of that offering, the selling shareholders have an added incentive to minimize the degree of underpricing.¹ If no secondary shares are involved, the loss of proceeds to the firm due to underpricing is spread among all shareholders. When the insider is personally affected, the discrepancy between the offer price and the subsequent trading value in the secondary shares is fully borne by the inside seller. This chapter provides evidence that IPOs with secondary shares have lower initial returns than issues comprised solely of primary securities. In addition, the degree of insider participation is negatively correlated with the cost of information.

Insiders who do not take part in the IPO are subject to the uncertainty of when the next available opportunity to register their shares will be as well as the corresponding stock value at that time. In addition, the process of security registration is both time consuming and expensive

for the company. Furthermore, an insider whose shares are not registered in the initial public offering but who, in the future, may wish to sell a portion or all of her holdings is subject to Rule 144 of the Securities Act of 1933 with respect to sales of securities. In this case, Rule 144 places restrictions on the length of time the shares must be held as well as the amount of equity that can be sold over a specified time period.² Therefore, many insiders may choose to register their shares in an initial public offering even if their demand for liquidity is not immediate for two reasons: 1) to circumvent the restrictions imposed by Rule 144 and 2) to avoid the uncertainty surrounding a subsequent offering. Under such a scenario, the insider may be participating in the issue due to institutional constraints imposed by securities regulation rather than an immediate need for funds. If the insider sells the shares during the initial public offering, the price received is assured and is not subject to exogenous factors that may influence security prices when the firm decides to issue equity again.

While all owners of the firm view underpricing as money out of pocket, secondary sellers have an additional incentive to mitigate the substantial initial returns to purchasers of IPOs. The lower the underpricing at the offering date, the higher are the proceeds directly to the selling shareholders as well as the firm as a whole. In the framework of Rock's model, one way in which an owner of secondary shares can alleviate the discrepancy between the offer price and subsequent trading value is to decrease the cost of

information. Owners not involved in secondary sales may view the tradeoff between not disclosing additional proprietary information and higher underpricing as efficient. In this case, the loss in proceeds to the firm due to a difference between the offer price and the subsequent trading value is borne by all shareholders. When insiders sell their own securities in the offering, however, the dissemination of additional information benefits them directly since they personally bear a part of the underpricing through the sale of secondary shares rather than spreading the entire cost over the firm. Disseminating additional information lowers the cost of information to investors and in return, decreases the amount of underpricing. In this case, the benefits of the reduction in the difference between the offer price and the underlying value of the security outweighs the costs of disclosing a greater amount of proprietary information.

This section will examine the hypothesis that insiders will only participate in the offering if the cost of information is low. In other words, if the cost of information is relatively high, the increased proceeds due to a lower amount of underpricing does not outweigh the expense of disclosing additional proprietary information. Hence, offerings containing secondary shares should have lower costs of information and less underpricing.

Empirical Results

The hypothesis that insiders will only participate in the initial public offering if the cost of information is low

predicts that issues with secondary sales should have lower initial returns than issues with only primary shares. Table 5-1 illustrates the difference in means between the two samples. The number of firms issuing secondary and primary shares is approximately equal to the sample of firms selling only primary equity.

Table 5-1
Difference of Means Test for the Sample of Firms
With and Without Secondary Shares

Variable	Secondary Shares		T-Statistic
	No	Yes	
Number of firms	770	687	
Initial return	10.62%	6.24%	4.47
21st day returns	12.78%	6.85%	3.98
Underwriting spread	8.41%	7.38%	17.37
Amount/Assets	487.60%	117.40%	5.24
Assets (millions)	80.02	52.14	1.31
Debt (millions)	55.65	29.89	1.40
Revenue (millions)	68.09	61.93	.37
Amount offered (millions)	12.23	19.25	6.74
Offering price	\$ 8.28	\$11.69	13.87

The mean initial return for issues with secondary shares is 6.42% while the mean return for IPOs without secondary shares is 10.62%. This difference is statistically significant at the 1% confidence level indicating that firms whose offering contains secondary shares have less underpricing than firms whose offerings do not. The underwriting spread is also smaller, which may be partially due to the difference in the amount offered and the cost of information. The underwriter, however, also knows that the insider in a secondary offering has an added incentive to receive the highest price possible for the securities. The

owner may be more willing to provide additional disclosure of material facts and, thereby, lessen the cost of acquiring information needed by the underwriter to certify the firm. Under such a scenario, the underwriter need not expend as many resources to gain knowledge about the firm's activities, managers and products and will charge a lower gross spread.

Although the size of the firm does not statistically differ, the difference in the cost of information between the two samples, as measured by the amount of the offering relative to the tangible assets of the firm, is significant. Firms with only primary shares have a ratio of offering amount to assets of 488% while offerings with participating insider shareholders have a ratio of only 118%. This difference supports the hypothesis that offerings containing secondary shares have a lower cost of information.

Table 5-2 shows initial returns to investors in IPOs and the amount of the offering attributable to secondary shareholders by the cost of information. As the cost of information increases, the initial returns for offerings both with and without secondary shares increase, as predicted by Rock's model. The increase in return, however, is only absolute in the case of secondary offerings. The number of issues containing secondary sales is fairly constant until the last two categories of percent of tangible assets offered. This result is consistent with the hypothesis that as the cost of information increases, fewer insiders will decide to participate in the issue. Interestingly, in the lowest category of percent of assets offered, the number of

issues with inside sellers is less than the number of issues that do not include secondary shares.

The initial return of primary offerings lies above that of issues containing secondary shares in all but the highest category of amount relative to assets but is statistically different only in the lowest category. This result is similar to the difference in means test for the full sample in Table 5-1 in which offerings with inside sellers have a higher mean initial return than offerings which do not. Finally, the percent of the insider participation as measured by the amount of the secondary offering divided by the total offering declines as information costs rise.³

Table 5-2
Initial Returns of Offerings With and Without
Secondary Offerings by Percent of Assets Offered
Amount of Offering/Tangible Assets^a

Amount/Assets	<u>Initial Returns</u>		T-Statistic	Percent of Offer Sold By Insiders
	Without Secondary Shares	With Secondary Shares		
< 23.0%	5.41% (125)	.33% (61)	4.01	10.29%
23% - 41.9%	3.79% (72)	3.08% (111)	.40	19.14%
42% - 61.9%	7.99% (74)	3.90% (106)	1.79	20.10%
62% - 88.9%	6.96% (76)	3.79% (103)	1.63	19.74%
89% - 129.9%	9.39% (73)	6.32% (108)	1.06	19.50%
130% - 199.9%	7.80% (77)	9.60% (106)	.79	16.28%
200% - 389.9%	16.41% (117)	12.80% (66)	1.01	11.83%
> 390%	18.67% (155)	22.25% (26)	.58	4.70%

^aNumber of firms in each category in parentheses.

Figure 5-1 illustrates the pattern of initial returns by each of the 32 categories of percent of assets offered presented in Chapter 4. Once again, those offerings with only primary shares have initial returns that are higher, on average, than those with insider participation.

In order to further examine the relationship between the percentage of the total amount offered that can be attributed to inside shareholders and the cost of information, Pearson correlation coefficients are presented in Table 5-3. All of the coefficients are significant at the 1% level. When the cost of information rises, as measured as the percent of assets offered, the amount of secondary selling declines as demonstrated by the negative correlation between the two variables. Furthermore, as the earnings history decreases, the percent of the offering attributed to secondary selling decreases. This positive correlation provides evidence for the cost of information hypothesis. The older the firm, the lower is the cost of information which in turn increases the amount of insider participation. An additional factor that could be contributing to the higher correlation between outside shareholders and earnings history, as compared to percent of assets offered, is that owners in older firms may have a greater need for liquidity since their capital has been tied up for longer periods of time. Therefore, when the firm goes public, these insiders take advantage of the opportunity to realize a return on capital. Finally, the negative correlation between initial returns and the amount of secondary selling is consistent with the theory

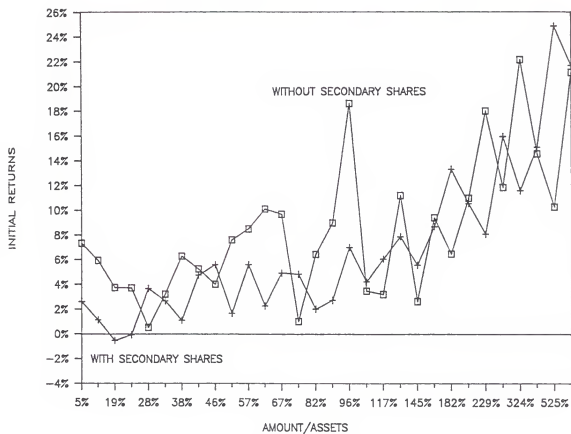


Figure 5-1
Initial Returns of Issues With and Without Secondary Offers
By Percent of Assets Offered

that as the cost of information increases, insider participation declines.

Table 5-3
Pearson Correlation Coefficients^b

	Initial Return	Amount/ Assets	Percent of Offer Sold By Insiders	Earnings History
Initial Return	1.0000	.2300	-.0973	-.1162
Amount/Assets	.2300	1.0000	-.1013	-.2047
Percent of Offer Sold by Insiders	-.0973	-.1013	1.0000	.3793
Earnings History	-.1162	-.2047	.3793	1.0000

^bAll coefficients are significant at the 1% confidence level.

The final test of the influence of secondary sales on initial returns is conducted using a regression analysis with initial returns as the dependent variable. The independent variables are the amount of the offering relative to the tangible assets of the firm and the percent of the offering that consists of secondary shares. As the cost of information increases, so does the return to investors in IPOs. Hence, the coefficient on percent of assets offered should be positive. Furthermore, inside shareholders have a personal incentive to ensure a lower degree of underpricing since they will individually bear the full impact of underpricing up to the amount of the equity they sell in the IPO. Therefore, the regression coefficient on secondary sales should be negative and significant. Table 5-4 presents the results of the regression analysis.

As the cost of information increases, so do the initial returns as evidenced by the positive and significant sign on

the coefficient in the first regression. Regressing initial returns on the percent of the offer sold by insiders yields a significantly negative coefficient and an adjusted R^2 of almost zero. When this variable is combined with the amount of the offering relative to the assets of the firm, both have the predicted sign and are statistically significant. However, the addition of secondary sales adds little to the explanatory power of the model. This result is primarily due to the fact that the disclosure of additional information by inside sellers is already impounded in the cost of information.

Table 5-4
Regression Analysis Using the Percent of Secondary
Participation As the Independent Variable^C

Constant	Amount/ Assets	Percent of Offer Sold By Insiders	Adj. R^2	F- Statistic	N
0.0885 (17.94)	0.0316 (9.01)*		0.052	81.233	1455
0.0983 (16.13)		-0.0909 (-3.80)*	0.001	14.415	1427
0.0977 (16.45)	0.0300 (8.82)*	-0.0700 (-2.98)*	0.060	46.474	1427

^CT-statistics in parentheses.

*Significant at the 1% confidence level.

Summary

The degree of insider participation is related to the cost of information through the amount of underpricing in an unseasoned issue. Unlike primary offerings where the difference between the offer price and the underlying value of the security is borne by all shareholders, inside sellers

bear the full cost of underpricing through the amount of shares they sell in the IPO. Since this is the case, secondary shareholders have an additional incentive to decrease the initial returns to investors in the offering by lowering the cost of becoming informed.

This chapter has provided evidence to support the hypothesis that offerings containing secondary shares should have both less underpricing and a lower cost of information than IPOs containing only primary securities. The difference in initial returns and the percent of tangible assets offered is statistically significant. In addition, secondary sales and the proxy for the cost of information are negatively and significantly correlated.

Notes

1. Insider shares sold in an offering are referred to as secondary shares while undistributed securities that are involved in the offering are called primary shares.
2. For additional information see Rule 144 of the 1933 Securities Act codified at 17 C.F.R. § 230.144.
3. The amount of insider participation includes those issues that had no secondary offerings. In this case, the percent offered by insiders in relation to the total offering would be zero.

CHAPTER 6 THE COST OF INFORMATION AND UNDERWRITER ACTIVITY

Introduction

Underwriters in initial public offerings must perform due diligence investigations into the reliability of the information contained in the offering prospectus. This chapter provides evidence that underwriters are willing to represent issuing firms regardless of the degree of information needed to certify the company as long as the increased cost is reflected in the gross spread.

The underwriter/investment banker acts as an intermediary between the issuing firm and potential investors, whose needs are often diametrically opposed. The issuing firm seeks to maximize the net proceeds to the company while the investor wants the highest return possible. The underwriter must balance the desires of both the investing public and issuing firm since each are integral components of the underwriter's livelihood.

Beatty and Ritter (1986) find that underwriters who over- or underprice IPOs too much lose market share. If the investment banking firm greatly underprices the IPO, it will be difficult for it to acquire other firms wishing to go public. On the other hand, if the underwriter does not allow a sufficient increase in price following the offering, its

investing clientele will not be interested in purchasing future public offerings. Therefore, the goal of the investment banker is to provide an equilibrium between the needs of the investors and the needs of the issuing firm.

In addition to balancing the desires of its clientele, the underwriter must protect itself from potential liability though the acquisition of information. The underwriter's compensation, the gross spread, is a function of the cost of acquiring information about the issuing firm. If the investment banker is able to impound the expense of due diligence into the gross spread, it should be indifferent between representing firms with high information costs as opposed to low information costs. The objective of this chapter is to test the hypothesis that an underwriter's total activity in the initial public offering market is not a function of the cost of information and that as the cost of information increases, the underwriter's compensation also increases. Finally, Rock's hypothesis will be examined using initial returns by underwriters to see whether or not individual investment bankers underprice IPOs to remunerate investors for the cost of becoming informed.

Empirical Results

There are 284 different investment bankers which underwrote 1,510 initial public offerings from 1983 to 1987, many of which were co-managed. As Table 6-1 shows, the majority of the issues, 925, have only one lead manager with the remaining 585 IPOs having two or more co-managers.

Table 6-1
Number of Managers Per Initial Public Offering

	One Manager	Two Managers	Three Managers	Four Managers	Five Managers
Number of Firms	925	497	84	3	1

The sample of underwriters employed in this chapter does not differentiate between single-managed issues and co-managed issues. Because the objective is to examine the overall activity of a sample of underwriters, the distinction of co-managing is not necessary. The sample of all underwritten issues, therefore, will exceed the sample size of 1,510 due to double counting.

There are two ways to classify underwriter activity over time: 1) by the total dollar amount of IPOs or 2) by the total number of IPOs brought to market. Although each of the categories are highly correlated, with a Pearson correlation coefficient of .92, there are some exceptions to the rule that larger total offering amounts are consistent with a larger number of issues. For example, D.H. Blair brought 51 issues to market with a total value of \$266 million. Lazard Freres, on the other hand, brought \$798 million worth of IPOs by only underwriting 10 issues.

The following classifications are chosen to represent underwriters that have some experience in the initial public offering market. The first, total dollar amount of activity, is limited to 170 underwriters who were involved in at least \$10 million worth of equity. In order to be included in the

second classification, the total number of IPOs brought to market, the underwriter must have managed or co-managed at least two issues, which yields a total of 176 investment bankers. Ten million dollars worth of equity includes many underwriters with more than two issues while a total count of two issues is comprised of some firms with as much as \$63 million in IPOs.¹

Mean statistics for each underwriter in the sample are calculated for selected offering and firm characteristics. This calculation yields one observation for each investment banker that meets one or both of the underwriter activity classifications. The underwriters are then divided into eight categories for both the total dollar amount offered and total number of issues with an equal number of observations in each category. Tables 6-2 and 6-3 illustrate the mean statistics for the categories of total amount and total number of IPOs, respectively.

For each table, as the total amount and total number of IPOs increase, the mean percent of assets offered as a proxy for the cost of information does not appear to have a discernable relationship. This is consistent with the hypothesis that underwriters do not sort themselves by the cost of information. The relationship between the cost of information and gross spread, in this case, cannot be readily defined. With the total amount classification, the gross spread declines as the amount increases, which is similar to Ritter's (1987) result. Price also appears to increase as the total amount increases but the relationship is not as

precise when breaking down the sample of underwriter activity by the total number of issues.

Table 6-2
Mean Statistics For Underwriters With a
Total Dollar Amount of IPOs
Greater Than \$10 Million^a

Total Amount	Initial Return	Gross Spread	Amount/ Assets	Assets	Amount	Price
10- 14.9	6.19%	8.71%	351%	8.78	5.78	\$ 6.45
15- 19.9	15.38%	8.54%	322%	10.45	6.73	\$ 6.75
20- 31.9	7.90%	8.52%	774%	9.47	10.73	\$ 7.67
32- 46.9	6.20%	7.68%	230%	21.71	12.16	\$ 9.55
47- 87.9	6.78%	7.68%	104%	471.75	20.93	\$10.66
88- 188.9	9.98%	7.78%	280%	18.56	16.76	\$10.88
189- 772.9	8.87%	7.30%	175%	165.72	26.83	\$12.48
> 773.0	3.66%	6.87%	287%	196.97	36.67	\$13.41

^aTotal amount and assets are in millions of dollars.

Table 6-3
Mean Statistics For Underwriters With a
Total Number of IPOs Greater Than Two Issues^b

Total Number	Initial Return	Gross Spread	Amount/ Assets	Assets	Amount	Price
10	29.13%	6.60%	283%	146.64	26.48	\$11.17
11	5.61%	8.40%	186%	11.96	18.78	\$ 9.60
12 - 13	4.55%	7.92%	143%	12.79	10.83	\$11.22
14 - 18	6.18%	7.88%	273%	24.08	8.49	\$ 8.33
19 - 24	8.59%	7.26%	194%	379.83	29.13	\$12.00
25 - 37	8.00%	6.76%	104%	55.51	56.15	\$14.56
38 - 48	3.80%	6.82%	174%	34.40	28.11	\$13.07
48 - 110	0.56%	7.51%	631%	376.29	21.63	\$11.53

^bTotal amount and assets are in millions of dollars.

Table 6-5 presents examines the relationship between the total dollar amount offered by underwriters, initial return and gross spread. Pearson correlation coefficients are computed for the percent of assets offered, asset size, offering amount and price.

Table 6-5
Pearson Correlation Coefficients On
Underwriters With a Total Amount Offered
Greater than \$10 Million

	Total Amount	Initial Return	Gross Spread	Assets/ Amount	Assets	Offer Amount	Offer Price
Total Amount	1.00	-.12	-.39*	-.03	.05	.49*	.40*
Initial Return	-.12	1.00	.39*	.23*	.06	-.18**	-.38*
Gross Spread	-.39*	.39*	1.00	.50*	-.41*	-.73*	-.88*
Assets/Amount	-.03	.23*	.50*	1.00	-.38*	-.28*	-.44*
Assets	.05	-.06	-.41*	-.38*	1.00	.44*	.40*
Offer Amount	.49*	-.18**	-.73*	-.28*	.44*	1.00	.77*
Offer Price	.40*	-.38*	-.88*	-.44*	.40*	.77*	1.00

*Significant at the 1% confidence level.

**Significant at the 5% confidence level.

The total amount offered by underwriters is not significantly correlated with the proxy for the cost of information as measured by the percent of assets offered. This is consistent with the hypothesis that underwriters with larger total offering amounts do not represent firms with either higher or lower costs of information. It does appear, however, that the larger investment bankers are involved in larger offerings with higher offering prices but not necessarily with greater asset sizes since the correlation on asset size is insignificant. The gross spread is significant and negatively correlated with the total dollar activity of the underwriter. Therefore, regardless of the mean percent of assets offered, the underwriter is compensated for both the cost of information and the size of the offering. Likewise, initial returns are positively correlated with the proxy for the cost of information supporting the hypothesis that the higher the cost of information, the greater are the

initial returns to investors as compensation for becoming informed.

Table 6-6 examines the Pearson correlation coefficients on the sample of underwriters that were involved in two or more issues over the five year time horizon.

Table 6-6
Pearson Correlation Coefficients On
Underwriters With a Total Number of Issues Offered
Greater than 2

	Total Number	Initial Return	Gross Spread	Assets/ Amount	Assets/ Assets	Offer Amount	Offer Price
Total Number	1.00	-.09	-.42*	-.04	.34*	.47*	.43*
Initial Return	-.09	1.00	.34*	.26*	-.16**	-.19*	-.36*
Gross Spread	-.42*	.34*	1.00	.45*	-.47*	-.72*	-.89*
Assets/Amount	-.04	.26*	-.45*	1.00	-.27*	-.20*	-.38*
Assets	.34*	-.16**	-.47*	-.27*	1.00	.69*	.49*
Offer Amount	.47*	-.19**	-.72*	-.20*	.69*	1.00	.75*
Offer Price	.43*	-.36*	-.89*	-.38*	.49*	.75*	1.00

*Significant at the 1% confidence level.

**Significant at the 5% confidence level.

Similar to Table 6-5, the total quantity of IPOs brought to market is not significantly correlated with the percent of assets offered as a proxy for the cost of information. Once again, both initial returns and gross spread increase as the cost of information increases. The main difference between Table 6-5 and Table 6-6 is that assets are now negatively correlated with initial returns and significant at the 5% confidence level. As the size of the firm increases, the degree of underpricing tends to decline. In addition, the asset size is positive and significantly related to the total number of firms brought to market by the underwriter. As the

number of offers increase, so does the size of the issuing firms.

Therefore, both tables support the hypothesis that underwriter activity is uncorrelated with the cost of information. Gross spread and initial returns, however, are significantly correlated with the percent of assets offered.

Summary

Underwriters in initial public offerings show substantial variation in the size and number of issues brought to market. Nevertheless, on average, underwriters will be unconcerned with the differences in information across firms as long as the gross spread compensates the investment banker for the increased expense of due diligence. In addition, the analysis of initial returns indicates that underwriters also compensate investors for acquiring information as evidenced by the negative correlation between initial returns and the percent of assets offered.

Note

1. For further information on total dollar amount and total number of issues underwritten by each investment banker, see Appendix F.

CHAPTER 7 CONCLUSION

The main focus of this study has been to examine the relationship between the cost of information and the corresponding initial returns to shareholders. According to Rock's model, as the cost of information increases, the degree of underpricing must also rise in order to compensate investors for greater expenditures in information acquisition.

In Chapter 2, the literature dealing with initial public offerings was reviewed. There has been unanimous support for the existence of substantial initial returns to investors in initial public offerings. The rationale for this underpricing, however, has not been adequately addressed in the studies to date.

Chapter 3 presented descriptive statistics on all firm commitment, Over-the-Counter IPOs, excluding unit offerings and bank stocks. Offering and firm characteristics by year varied over time. The year 1983 had a greater number of offers and higher initial returns than any other year in the sample. This corresponds to Ritter's (1984) definition of a "hot issue" market. In contrast, 1984 can be considered a "cold issue" market since the number of issues as well as the return is low in relation to other years. Also addressed in

this chapter was whether or not the choice to syndicate the issue affected the returns to shareholders. A difference of means test yielded issues that were smaller in size, offering amount and price in non-syndicated IPOs than those in syndicated offerings.

Chapter 4 used the amount of the offering relative to the tangible assets as a proxy for the cost of information. Evidence was provided for the hypothesis that firms with a higher cost of information have a greater amount of underpricing. This result was upheld even when comparing the proxy for information costs with variables used in other studies. Segmenting the sample by leveraged buyouts with a lower cost of information generates lower initial returns than a comparable sample of other initial public offerings. In addition, the choice of stock exchange where the IPO of the leveraged buyout will trade does not have a significant effect on initial price performance.

The presence of secondary shares in an initial public offering lowers the amount of underpricing as was shown in Chapter 6. Insiders have a personal incentive to mitigate the influence of underpricing through the dissemination of information. The comparison of IPOs with and without insider participation resulted in lower initial returns for those offerings with secondary shares. Furthermore, the percent of the offering attributed to inside sellers declines as the cost of information increases.

Finally, in Chapter 6, underwriters compound the cost of information acquisition into the gross spread charged to the

issuing firm. As long as the remuneration is sufficient to compensate investment bankers for resources expended in gathering information, they are indifferent between firms with low information costs and firms with high information costs.

In summary, this study has provided empirical evidence in support of Rock's model in which investors, as well as underwriters, are compensated for acquiring information through the initial return and gross spread, respectively.

APPENDIX A
LIST OF VARIABLES IN
INVESTMENT DEALERS' DIGEST DATABASE

<u>Name</u>	<u>Description</u>
ISSUER	Issuer Name
DATE	Offer Date
PRICE	Offer Price
SHRTHOU	Total Shares Offered (thous)
AMT	Dollar Amount Offered (mils)
MGRS	Managers
NUMMGR	Number of Managers
UNDTYPE	Negotiated or Competitive Bid
GSPREAD	Gross Spread (\$)
GPRT	Gross as % of Price
MFEE	Management Fee (\$)
UFFE	Underwriting Fee (\$)
SELL	Selling Concession (\$)
RFEE	Reallowance Fee (\$)
SYND	Syndicated or Non-Syndicated
EXP	Expenses of Offering
NETPRO	Proceeds (mils) After Deducting Gross Spread
TRUEPRO	Proceeds After All Issuing Expenses
NETPERS	Net Proceeds Per Share
SHELF	Shelf Registration (Yes or No)
IPO	IPO (Yes or No)
CUSIP	Cusip Number
XPRIM	Traded Exchange
SECFORM	SEC File Form
PRIMMIL	Primary Shares Offered (mils)
SCNDMIL	Secondary Shares Offered (mils)
MGRALL	Managing Underwriters
OUTMILL	Common Stock Outstanding Before Offer (mils)
OVERDOL	\$ Amount of Overallotment (mils)
OVERSOLD	\$ Amount of Overallotment Sold (mils)
OVERMIL	Overallotment Shares Available (mils)
OVERSDLD	Overallotment Shares Sold (mils)
PRDAYSX	Stock Price 30 Days After Offer
DOWOFF	DJIA at Offer Date
DOWX	DJIA 30 Days After Offer
IDXOFF	NASDAQ Composite at Offer Date
IDXX	NASDAQ Composite 30 Days After Offer
UNITPR	Price Per Unit

NUMUNIT	Total Number of Units
UTYPE	Unit Type
WARENT	Warrent Entitlement
DETDATE	Detachment Date
IWAREXR	Initial Exercise Price of Warrant
IWAREXP	Date Initial Exercise Price Expires
WAREXP	Warrant Expiration Date
CVTOUT	Total Shares Outstanding After Offer
UCOMP	Unit Composition
LOWFR	Low File Price
HIFR	High File Price
IGROUP	Industry Group
ICODE	Industry Code
HITECH	Hitech (Yes or No)
SICM	Main SIC Code
DUNS	D & B Number
REV	Revenue (mils)
NIAT	Net Income
MARGIN	Margin on Revenue (%)
MARGPCT	Margin (%)
EARNNT	Earnings Note
STD	Short Term Debt
LTD	Long Term Debt
SUB	Subordinated Long Term Debt
LTDTOT	Total Long Term Debt
DEBTOT	Total Debt
ASSETS	Total Assets Before Offer
EQUITY	Total Equity
EPS	Lastest 12 Month EPS (Adjusted)
LASTEPS	Last Audited EPS (Fiscal)
TWOEPS	2 Year Prior Audited EPS
THREPS	3 Year Prior Audited EPS
FREPS	4 Year Prior Audited EPS
FVEPS	5 Year Prior Audited EPS
MKTBEF	Market Value Before Offer
PCTOFFD	Percent of Company Offered
PE	Fully Diluted PE Ratio
COMPRI	Common Equity Before Offer

APPENDIX B
NAMES AND OFFER DATES OF INITIAL PUBLIC OFFERINGS
OF LEVERAGED BUYOUTS

<u>LBO Name</u>	<u>Offer Date</u>
A&W Brand	870508
Allegheny Ludlum	870508
Allstar Inns	870327
Albany International	870930
American Woodmark	860718
Anchor Glass Container	860610
Atari	861107
Baker, J. Inc	860605
Baldwin Piano & Organ	861008
Bench Craft	831214
Big Bear, Inc	830804
Boys Markets	870515
Budget Rent-a-Car	870522
Calgon Carbon	870602
Capital Wire & Cable	860409
Cato Corp.	870422
Cedar Fair, L.P.	870423
Charter-Crellin	860521
Charter Power Systems	870206
Child World	850823
Coast America	870702
Communications Transmission	871008
Continental Homes	870219
E-II Holdings	870702
Easco Hand Tools	870515
Edgecomb Corp.	861125
Foodmaker, Inc.	870224
Formica	870626
Forstmann & Co.	870701
Fruit of the Loom	870303
Garden America	860116
Genicom	860625
Georgia Gulf	861217
Gibson Greetings	830519
Goodmark Foods	851107
Graphic Packaging	870514
HWC Distribution	870623
Harley-Davidson	860708
Harris Graphics	841010

<u>LBO Name</u>	<u>Offer Date</u>
Heekin Can	850906
Hills Dept. Stores	870708
Huntor-Melnor	870625
Ideal School Supply	861210
Jason Inc.	870616
Johnson Worldwide	871009
Kincaid Furniture	830721
Lawson Mardon Group	870529
Leslie Fay Companies	860801
Liggett Group	871008
Lily-Tulip	840314
MBS Textbook Exchange	870204
MMR Holding Corp.	870319
Fred Meyer	861023
Moore-Handley, Inc.	870811
Motel 6, L.P.	861031
Multi-Color Corp.	870827
NI Industries Inc.	831027
Outlet Communications	870121
P&C Foods	860827
PT Components, Inc.	850313
Pannill Knitting Co.	860610
Pay'N Save, Inc.	860710
Portage Industries	870402
Proffitt's Inc.	870603
Quality Food Centers	870327
Regina	851115
Reliance Group Holdings	860926
Rexworks	870421
Schult Homes	870226
Charles Schwab	870922
Shoe-Town	830831
Specialty Equipment	870702
Spectramed	870619
Stanley Interiors	860923
Stater Bros.	851107
Steel West of Va.	871006
Sterling Inc.	860514
Sun Distributors	870205
Tiffany	870505
Topps	870521
Tyco Toys	860219
Vista Chemical	861211
Wearever-Proctor Silex	860808
Wellman Inc.	870603
Western Auto Supply	870121
Western Publishing Group	860422
Winchell's Donut Houses	861219
Winston Furniture	870818

APPENDIX C
COMPARISON OF FULL IPO SAMPLE AND LBO SAMPLE

Mean Statistical Comparison Between
Full IPO Sample and LBO Sample

Variables	IPO Sample	LBO Sample	T- Statistic
Number of firms	1454	84	
Initial return	9.03%	1.91%	9.04
21st day return	10.40%	2.51%	4.66
Underwriting gross spread	7.96%	6.79%	17.13
Amount/Assets	323.56%	301.82%	.10
Assets (millions)	64.05	245.13	2.56
Debt (millions)	41.48	118.49	2.73
Revenue (millions)	58.38	314.96	5.42
Amount offered	15.32	49.00	5.54
Offering price	\$ 9.82	\$13.20	7.14
Percent of firm offered	31.70%	34.08%	1.41

The difference of means test is significantly different at the one percent confidence level for both the initial and twenty-first day returns as well as the underwriting spread.

APPENDIX D
COMPARISON OF IPO SAMPLE AND LBO SAMPLE
BY THE ASSETS OF THE FIRM

Mean Statistical Comparison Between
IPO Sample and LBO Sample By
19m < ASSETS < 758m^a

Variables	IPO Sample	LBO Sample	T- Statistic
Number of firms	495	75	
Initial return	4.65%	1.93%	3.33
21st day return	5.53%	3.62%	1.03
Underwriting gross spread	7.11%	6.83%	4.16
Amount/Assets	52.68%	34.21%	4.64
Assets (millions)	83.32	174.40	4.39
Debt (millions)	39.18	74.27	2.89
Revenue (millions)	91.35	263.38	5.12
Amount offered	24.92	40.49	3.43
Offering price	\$12.88	\$13.35	.88
Percent of firm offered	27.78%	34.12%	3.72

^aThe firms deleted from the sample due to missing asset variables or outliers of the asset variable are:

<u>Name</u>	<u>Assets</u>
Child World	.
E-II Holdings	.
Liggett Group	.
Lily-Tulip	.
Tyco Toys	.
Fruit of the Loom	1.6m
Charles Schwab	1.9m
Motel 6	948.8m
Reliance Group Holdings	5333.0m

The difference of means test is significantly different at the one percent confidence level for the initial day return and underwriting spread. The twenty-first day returns are not significantly different.

Names and Asset Sizes of Leveraged Buyouts

<u>Name</u>	<u>Assets</u>
Child World	.
E-II Holdings	.
Liggett Group	.
Lily-Tulip	.
Tyco Toys	.
Fruit of the Loom	1.6
Charles Schwab	1.9
MBS Textbook Exchange	19.9
Multi-Color	22.7
Rexworks	22.9
Graphic Packaging	23.6
Ideal School Supply	24.2
Kincaid Furniture	25.1
Goodmark Foods	25.4
Winston Furniture	26.9
GardenAmerica	28.0
Bench Craft	33.2
Proffitt's	35.3
Charter-Crellin	35.5
Capital Wire and Cable	35.6
HWC Distribution	36.2
Quality Food Centers	37.7
Regina	40.9
American Woodmark	46.2
Jason	51.2
Shoe-Town	53.7
J. Baker	57.0
Steel of West Virginia	57.1
Sterling	63.0
MMR Holding	68.6
Baldwin Piano and Organ	79.8
Genicom	80.5
Continental Homes Holding	84.9
Cato	89.5
Easco Hand Tools	98.2
Charter Power Systems	98.7
Tiffany	98.7
Stanley Interiors	112.8
Winchell's Donut Houses	112.8
Topps	113.7
Johnson Worldwide Associates	114.2
Stater Brothers	114.6
A & W Brands'	115.1
Spectramed	115.6
Huntor-Melnor	117.7
Forstmann	120.0
Harley-Davidson	126.1
Gibson Greetings	126.1
Wearever-Proctor Silex	128.6
Calgon Carbon	130.0

<u>Name</u>	<u>Assets</u>
Atari	134.3
Western Publishing Group	135.3
Heekin Can	135.9
PT Components	137.1
Cedar Fair	142.5
Big Bear	150.7
CoastAmerica	153.9
Wellman	174.4
Boys Markets	180.6
Pannill Knitting Company	193.7
Allstar Inns	198.5
Communications Transmission	215.4
Specialty Equipment	216.0
Outlet Communications	216.2
P & C Foods	220.8
Georgia Gulf	256.7
Anchor Glass Container	267.3
Leslie Fay Companies	287.5
Formica	318.6
Edgecomb	337.2
Albany International	378.5
Western Auto Supply	429.5
NI Industries	457.4
Vista Chemical	485.1
Allegheny Ludlum	504.9
Fred Meyer	518.0
Foodmaker	528.3
Lawson Mardon Group	543.4
Pay'N Save Inc.	577.1
Budget Rent-a-Car	757.4
Hills Department Stores	757.7
Motel 6	948.8
Reliance Group Holdings	5333.0

APPENDIX E
COMPARISON OF IPO SAMPLE AND LBO SAMPLE
BY THE AMOUNT OF THE OFFERING

Mean Statistical Comparison Between
IPO Sample and LBO Sample By
6m < OFFERING AMOUNT < 345m

Variables	IPO Sample	LBO Sample	T- Statistic
Number of firms	956	84	
Initial return	6.82%	1.91%	6.50
21st day return	7.64%	2.51%	3.07
Underwriting gross spread	7.30%	6.79%	7.87
Amount/Assets	276.60%	301.82%	.11
Assets (millions)	92.20	243.13	2.16
Debt (millions)	54.63	118.49	2.14
Revenue (millions)	80.36	314.96	4.88
Amount offered	21.38	49.00	4.53
Offering price	\$12.12	\$13.20	2.27
Percent of firm offered	30.10%	34.08%	2.32

The difference of means test is significantly different at the one percent confidence level for the initial and twenty-first day returns as well as the underwriting spread.

Names and Offer Amounts of Leverage Buyouts

<u>Names</u>	<u>Amount Offered</u>
Rexworks	6.2
Jason	6.4
Proffitt's	8.0
Huntor-Melnor	9.0
Stater Brothers	10.0
Charter-Crellin	10.4
Multi-Color	10.6
Ideal School Supply	11.0
Winston Furniture	11.2
Graphic Packaging	12.1
P & C Foods	12.6
Edgecomb	12.6
Baldwin Piano and Organ	12.7
Bench Craft	13.8
Continental Homes Holding	13.8
HWC Distribution	14.4
Boys Markets	14.4
MMR Holding	14.9
Genicom	14.9
MBS Textbook Exchange	15.0
Outlet Communications	15.2
Tyco Toys	15.4
Capital Wire and Cable	15.6
Coodmark Foods	16.0
Quality Food Centers	16.9
Stanley Interiors	17.5
Regina	18.0
Kincaid Furniture	18.1
GardenAmerica	18.2
Sterling	18.6
American Woodmark	18.8
Steel of West Virginia	20.0
CoastAmerica	21.0
Charter Power Systems	22.0
Harley-Davidson	22.0
Topps	22.1
Weaver-Procter Silex	25.2
Heekin Can	25.3
Big Bear	26.3
Communications Transmission	26.4
Johnson Worldwide Associates	28.8
Specialty Equipment	31.0
Cato	32.4
Forstmann	33.0
Hills Department Stores	34.9
Budget Rent-a-Car	35.0
Child World	35.8
Easco Hand Tools	35.8
A & W Brands	37.4
J. Baker	37.8

<u>Name</u>	<u>Amount Offered</u>
PT Components	38.5
Shoe-Town	40.0
Spectramed	40.0
Foodmaker	43.2
Lily-Tulip	45.6
Western Auto Supply	46.8
Liggett Group	48.0
Formica	48.5
Lawson Mardon Group	50.8
Anchor Glass Container	51.3
Atari	51.8
Pay'N Save Inc.	52.0
Leslie Fay Companies	72.0
Allstar Inns	72.9
Vista Chemical	75.6
Calgon Carbon	77.0
Georgia Gulf	78.0
Wellman	80.0
Albany International	80.0
Tiffany	80.5
Motel 6	81.0
Winchell's Donut Houses	90.0
Fred Meyer	96.2
Gibson Greetings	96.3
Charles Schwab	115.5
NI Industries	120.0
Pannill Knitting Company	126.0
Allegheny Ludlum	129.1
Reliance Group Holdings	150.0
Cedar Fair	160.0
Western Publishing Group	201.6
Fruit of the Loom	243.0
E-II Holdings	345.0

APPENDIX F
 MEAN FIRM AND OFFERING CHARACTERISTICS FOR UNDERWRITERS HAVING
 TOTAL DOLLAR AMOUNTS OFFERED GREATER THEN \$10 MILLION
 AND/OR A TOTAL NUMBER OF ISSUES GREATER THAN TWO

Total Count, Initial Return, Percent of Assets Offered,
 and Gross Spread by Total Amount Offered

	Total Amount	Total Count	Initial Return	Amount/ Assets	Gross Spread
Alex. Brown & Sons	2684.5	110	10.41%	246%	7.02%
Shearson Lehman/AX	2578.9	57	1.59%	453%	6.73%
Drexel Burnham	2348.1	86	2.75%	99%	7.00%
Morgan Stanley	2134.0	48	5.42%	119%	6.71%
L.F. Rothschild	1660.3	62	6.10%	134%	6.95%
Merrill Lynch Cap Mkts	1630.3	45	3.29%	57%	6.77%
Hambrecht & Quist	1562.2	58	10.92%	161%	6.98%
Goldman Sachs	1533.9	39	3.28%	68%	6.75%
Robertson, Colman	1342.8	47	9.02%	175%	7.00%
Kidder, Peabody	1321.1	61	4.86%	123%	7.09%
Prudential Bache	1316.0	45	4.96%	121%	6.81%
First Boston Corp	1218.2	20	4.73%	58%	6.60%
Donaldson, Lufkin	1075.3	37	3.38%	94%	7.08%
E.F. Hutton	1054.6	49	7.03%	845%	7.12%
Montgomery Securities	1005.1	38	9.85%	148%	6.96%
Saloman Brothers	990.0	26	3.63%	96%	6.75%
Smith Barney	906.8	39	3.14%	1075%	7.12%
Shearson/Am Express	868.0	20	5.27%	804%	6.86%
Wm. Blair & Company	865.9	33	7.57%	62%	7.12%
Lazard Freres	788.8	10	8.53%	55%	6.39%
Paine Webber	773.1	29	1.67%	617%	7.20%
Dean Witter Reynolds	741.5	35	5.20%	99%	7.21%
McDonald & Company	596.6	18	10.14%	78%	7.16%
Bear Sterns	541.3	32	2.54%	58%	7.20%
Merrill Lynch Wht Wld	450.8	12	9.15%	581%	6.81%
Lehman Brothers	430.0	19	2.10%	180%	6.89%
Piper, Jaffray	377.2	24	6.11%	142%	7.27%
Robinson-Humphrey	351.2	19	4.35%	70%	7.21%
Wheat, First	348.8	17	0.63%	2549%	7.40%
Blyth Eastman	296.6	11	0.02%	231%	6.97%
Dain Bosworth	280.3	20	10.76%	112%	7.64%
Advest	272.6	32	5.76%	83%	7.93%
D.H. Blair	265.9	51	16.72%	676%	9.82%
Robinson-Humphrey/AX	227.9	14	6.00%	100%	7.13%

	Total Amount	Total Count	Initial Return	Amount/ Assets	Gross Spread
Rooney Pace	226.4	21	13.14%	382%	9.27%
Ladenburg, Thalmann	210.8	28	8.62%	169%	7.67%
Dillon, Read	201.0	7	2.26%	89%	7.09%
Boettcher	198.9	18	4.09%	72%	8.41%
Sutro & Company	195.8	14	10.84%	140%	7.71%
Oppenheimer	193.4	13	6.63%	46%	7.68%
F. Eberstadt	190.4	9	4.17%	96%	6.91%
A.G. Edwards	189.6	11	5.97%	2300%	7.49%
Kleinwort, Benson	186.7	3	3.30%	118%	6.17%
Interstate Securities	182.6	14	0.61%	67%	7.41%
J.C. Bradford	178.9	13	5.41%	132%	7.32%
Rotan Mosle	165.9	10	8.79%	165%	7.28%
Butcher & Singer	153.9	8	9.35%	4750%	7.53%
Cowen	150.9	7	7.87%	154%	7.25%
Wedbush, Noble, Cook	149.8	12	-0.17%	99%	8.07%
Cable, Howse & Ragen	148.1	6	10.45%	255%	7.38%
Blunt Ellis & Loewi	141.3	17	4.38%	107%	7.70%
Robert W. Baird	140.4	10	3.52%	67%	7.30%
A.G Becker Paribas	128.8	6	2.97%	149%	7.18%
Prescott, Ball	121.7	15	6.74%	223%	8.25%
Laidlaw Adams & Peck	119.9	19	19.64%	195%	9.77%
Tucker, Anthony	118.7	14	9.19%	462%	7.77%
Moseley, Hallgarten	114.4	13	0.88%	247%	8.23%
Furman Selz Mager	113.0	10	16.71%	246%	7.85%
Eppler, Guerin	112.0	12	4.76%	123%	7.55%
Rauscher Pierce	111.8	13	4.95%	73%	7.76%
Howard, Weil	98.0	8	3.09%	123%	7.44%
Chicago	95.3	12	2.19%	52%	7.77%
Thomson McKinnon	88.8	5	7.82%	43%	7.04%
Morgan Keegan	86.5	8	10.18%	45%	7.69%
Janney Montgomery	84.4	7	2.80%	65%	7.49%
Sogen Securities	82.0	1	20.75%	1%	2.82%
Ohio Company	81.1	11	11.77%	71%	7.94%
Swergold, Chefitz	80.8	6	1.75%	112%	7.06%
Charterhouse Japhet	78.8	1	0.00%	96%	6.29%
Marketfield	65.7	3	23.93%	600%	9.17%
Burns Pauli	65.4	3	6.39%	162%	7.93%
Wer-Schroeder	62.9	2	-0.16%	28%	6.80%
Woodman, Kirkpatrick	62.6	4	12.73%	333%	7.15%
Bateman Eichler	62.2	6	-1.68%	139%	7.76%
First Albany	60.6	8	-0.13%	51%	7.70%
McKinley	58.7	9	4.08%	324%	9.38%
Steinberg	57.5	11	13.85%	178%	9.45%
Warburg Paribas	57.5	1	1.09%	78%	6.30%
Whale Securities	53.4	11	24.28%	371%	9.86%
Seidler Amdec	53.1	4	5.77%	137%	7.70%
Allen & Company	52.6	5	16.29%	128%	7.35%
Needham	50.6	4	4.89%	63%	7.01%
Becker Paribas	50.1	5	3.68%	58%	7.88%
Sherwood Securities	47.8	4	5.16%	91%	9.01%
Stifel, Nicolaus	46.9	5	9.93%	77%	7.86%
Stephens Inc.	46.9	5	4.16%	91%	8.11%

	Total Amount	Total Count	Initial Return	Amount/ Assets	Gross Spread
Institutional Equity	46.6	7	7.00%	116%	7.86%
Raymond, James	46.6	7	3.68%	92%	8.64%
F.N. Wolf	45.9	10	29.98%	402%	9.80%
Wessels	45.0	2	1.57%	48%	7.00%
Wm. K. Woodruff & Co.	42.3	6	15.06%	148%	8.21%
Schneider, Bernet	42.2	5	1.23%	146%	7.68%
Johnson, Lane Space	42.1	4	5.08%	155%	7.63%
Wertheim & Co.	40.5	2	0.00%	37%	6.88%
Morgan, Olmstead	40.4	4	11.35%	175%	8.12%
First Affiliated	40.0	12	7.20%	497%	0.00%
Rothschild	39.3	2	3.32%	318%	7.08%
Hanifen, Imhoff	38.8	5	2.58%	489%	8.56%
Volpe	37.6	1	20.83%	155%	7.00%
Legg Mason	37.5	5	-0.56%	60%	7.79%
Ryan, Beck	36.0	3	6.15%	18%	7.01%
Invemed Associates	34.3	2	32.50%	119%	7.63%
Paulson Investment	34.0	10	2.96%	620%	8.72%
H.J. Meyers & Company	33.8	6	12.35%	200%	9.51%
Weber, Hall, Sale	33.1	7	2.68%	420%	8.73%
Carolina Securities	32.0	5	-1.06%	2515%	8.36%
Fox Pitt	31.4	2	-3.33%	86%	7.35%
Meuse, Rinker	31.1	1	0.00%		7.80%
First of Michigan	30.8	4	6.17%	67%	7.45%
George K. Baum & Co.	30.2	2	23.57%	133%	7.34%
Moseley Securities	29.7	4	5.47%	340%	8.19%
Gilford Securities	28.3	7	16.31%	1212%	10.00%
Baker, Watts	27.5	3	6.48%	109%	8.31%
James J. Duane & Co.	26.5	6	-0.52%	362%	9.67%
R.G. Dickinson & Co.	25.3	6	17.48%	1378%	9.32%
Johnston, Lemon	24.7	3	0.00%	96%	7.66%
S.D. Cohn & Co.	24.3	7	10.71%	1628%	10.00%
Blackstock	22.8	5	1.46%	2478%	9.80%
First Equity Corp.	22.7	3	13.15%	1181%	8.67%
London Freed	22.2	1	-6.25%	101%	7.08%
Craig-Hallum	22.1	7	21.49%	422%	10.00%
Roney	22.1	3	14.12%	44%	8.17%
Investment Corp. of Va.	22.0	1	-1.14%	81%	6.82%
Starr Securities	21.9	6	37.18%	403%	10.00%
Mabon, Nugent	20.0	1	-2.50%	10000%	7.00%
Lovett Mitchell Webb	19.8	2	2.27%	73%	7.00%
Lowell H. Listrom & Co.	19.7	7	0.18%	545%	8.71%
Evans LLewellyn	19.4	6	9.49%	222%	9.09%
Freehling	19.1	2	33.75%	1082%	8.25%
Nomura	18.4	2	1.91%	50%	6.99%
Fitzgerald, DeArman	18.0	5	-2.63%	303%	10.00%
Milwaukee Company	18.0	3	7.07%	27%	7.75%
Enskilda Securities	18.0	1	1.39%	68%	7.00%
Wm. Sword & Company	18.0	1	3.13%	25%	7.50%
Birr, Wilson	17.6	4	9.06%	87%	8.83%
B.C. Christopher & Co.	17.3	4	0.42%	346%	9.11%
Werbhel-Roth Securities	17.0	7	53.48%	450%	10.00%
Adams, James	16.7	5	0.00%	275%	9.20%

	Total Amount	Total Count	Initial Return	Amount/ Assets	Gross Spread
First Analysis	16.3	1	12.00%	130%	7.52%
Commerce Capital	16.0	2	10.04%	97%	8.69%
Comiteau Levine	15.8	6	55.21%	257%	9.70%
Gintel & Company	15.8	2	31.37%	197%	8.36%
Josephthal	15.6	3	7.20%	63%	8.18%
Southwest Securities	15.4	3	7.69%	204%	8.25%
N. American Investment	15.2	3	17.36%	325%	10.00%
W.H. Newbold	15.0	3	4.43%	56%	8.16%
Scott & Stringfellow	14.8	4	1.20%	86%	8.24%
Sherwood Capital	14.8	2	9.06%	67%	8.65%
John G. Kinnard & Co.	14.7	3	37.50%	144%	8.83%
Brean Murray	14.7	2	5.42%	231%	8.21%
Blinder, Robinson	14.4	4	29.17%	398%	10.00%
Engler & Budd	14.0	6	36.11%	299%	10.00%
Van Kasper & Company	13.9	3	3.89%	178%	9.14%
Summit Investment	13.0	4	12.93%	690%	9.50%
Cazenova	12.8	1	7.35%	186%	7.29%
Wm. C. Roney & Company	12.7	3	1.91%	47%	8.73%
Bacon Stifel	12.6	3	4.05%	245%	8.67%
First Uni Ca	12.4	2	-2.27%	83%	10.00%
N. Donald & Company	11.6	4	56.77%	217%	10.00%
Rodman	11.6	1	1.72%		7.52%
Illinois Company	11.2	1	-14.06%	47%	6.88%
Dickinson, Rothbart	10.5	1	0.00%	29%	7.20%
Burgess & Leith	10.4	2	7.75%	89%	8.59%
Hickey, Kober	10.3	3	-2.22%	847%	9.67%
San Diego Securities	10.3	2	7.50%	525%	10.00%
Stuart James	10.2	5	53.08%	146%	10.00%
Hertzfeld & Stern	10.2	2	1.61%	135%	8.00%
Underwood, Neuhaus	10.1	2	9.85%	134%	8.13%
A.L. Havens	10.0	3	4.17%	558%	10.00%
Akroyd & Smithers	10.0	2	-1.19%	109%	10.00%
First Wilshire	9.3	3	-1.04%	112%	10.00%
Yorke-McCarter	9.3	2	-4.00%	655%	10.00%
Ferris & Company	9.2	3	-2.65%	46%	7.83%
Baer	8.9	2	1.25%	188%	10.00%
Spectrum Securities	8.9	2	4.55%	441%	10.00%
Muller & Company	8.8	2	8.33%	54%	10.00%
Stern Brothers	8.6	2	7.35%	603%	9.53%
R.J. Steichen & Co.	8.5	2	2.78%	400%	10.00%
J.W. Kaufmann & Company	7.9	3	14.27%	1513%	10.00%
Manley, Bennett	7.6	2	-5.65%	513%	9.25%
J.T. Moran	7.6	2	1.47%	233%	10.00%
Providence Securities	6.9	3	12.09%	152%	10.00%
K.A. Knapp	6.5	2	-5.00%	124%	10.00%
I.M. Simon & Co.	6.5	2	3.13%	119%	9.50%
Chapin Davis	6.0	2	25.00%	1506%	10.00%
E.J. Pittock	5.5	2	8.75%	479%	10.00%
Chesley & Dunn	5.0	2	0.00%	200%	10.00%
Pagel	4.9	2	37.10%	492%	10.00%
Swartwood, Heese	4.8	2	-5.00%	350%	10.00%
Heiner-Stock	4.4	2	23.33%	238%	10.00%

	Total Amount	Total Count	Initial Return	Amount/ Assets	Gross Spread
J.W. Gant & Associates	4.2	2	12.50%	608%	10.00%
Greentree Securities	4.1	2	25.00%	76%	10.00%

Total Count, Assets Offer Amount and Offer Price
By Total Amount Offered

	Total Amount	Total Count	Assets	Offer Amount	Offer Price
Alex. Brown & Sons	2684.5	110	54.61	24.40	\$14.04
Shearson Lehman/AX	2578.9	57	261.03	45.24	\$12.95
Drexel Burnham	2348.1	86	195.38	27.30	\$11.44
Morgan Stanley	2134.0	48	316.82	44.46	\$16.42
L.F. Rothschild	1660.3	62	30.97	26.78	\$11.59
Merrill Lynch Cap Mkts	1630.3	45	440.97	36.23	\$12.54
Hambrecht & Quist	1562.2	58	23.16	27.21	\$13.17
Goldman Sachs	1533.9	39	325.70	39.33	\$15.40
Robertson, Colman	1342.8	47	27.91	28.57	\$12.98
Kidder, Peabody	1321.1	61	60.15	21.66	\$13.01
Prudential Bache	1316.0	45	64.39	29.24	\$14.87
First Boston Corp	1218.2	20	713.36	60.91	\$16.35
Donaldson, Lufkin	1075.3	37	79.96	29.06	\$13.45
E.F. Hutton	1054.6	49	160.37	21.52	\$12.13
Montgomery Securities	1005.1	38	48.18	26.45	\$12.91
Saloman Brothers	990.0	26	83.30	38.08	\$14.69
Smith Barney	906.8	39	90.07	23.25	\$12.62
Shearson/Am Express	868.0	20	53.89	43.40	\$13.33
Wm. Blair & Company	865.9	33	61.00	26.24	\$13.63
Lazard Freres	788.8	10	170.24	78.88	\$15.90
Paine Webber	773.1	29	61.52	26.66	\$11.13
Dean Witter Reynolds	741.5	35	93.69	21.19	\$12.76
McDonald & Company	596.6	18	61.94	16.48	\$12.47
Bear Sterns	541.3	32	129.34	16.92	\$10.49
Merrill Lynch Wht Wld	450.8	12	54.69	37.57	\$16.88
Lehman Brothers	430.0	19	24.46	22.63	\$14.24
Piper, Jaffray	377.2	24	31.94	15.72	\$11.21
Robinson-Humphrey	351.2	19	105.32	18.48	\$11.53
Wheat, First	348.8	17	78.72	20.52	\$12.38
Blyth Eastman	296.6	11	56.42	26.96	\$14.86
Dain Bosworth	280.3	20	165.16	14.02	\$10.25
Advest	272.6	32	15.79	8.52	\$ 8.45
D.H. Blair	265.9	51	4.14	5.21	\$ 5.78
Robinson-Humphrey/AX	227.9	14	26.48	16.28	\$12.23
Rooney Pace	226.4	21	15.09	10.78	\$ 6.70
Ladenburg, Thalmann	210.8	28	28.76	7.53	\$ 7.61
Dillon, Read	201.0	7	64.42	28.71	\$16.46
Boettcher	198.9	18	210.70	11.05	\$ 7.26
Sutro & Company	195.8	14	13.14	13.99	\$10.00
Oppenheimer	193.4	13	51.08	14.88	\$11.08
F. Eberstadt	190.4	9	45.56	29.76	\$13.11
A.G. Edwards	189.6	11	50.17	17.24	\$12.80

	Total Amount	Total Count	Assets	Offer Amount	Offer Price
Kleinwort, Benson	186.7	3	541.40	62.23	\$15.50
Interstate Securities	182.6	14	52.68	13.04	\$11.39
J.C. Bradford	178.9	13	22.45	13.76	\$12.62
Rotan Mosle	165.9	10	14.57	16.59	\$13.05
Butcher & Singer	153.9	8	43.83	19.24	\$10.03
Cowen	150.9	7	21.19	21.56	\$12.07
Wedbush, Noble, Cook	149.8	12	33.45	12.48	\$ 9.55
Cable, Howse & Ragen	148.1	6	22.98	24.68	\$12.92
Blunt Ellis & Loewi	141.3	17	32.73	8.31	\$ 8.60
Robert W. Baird	140.4	10	58.75	14.04	\$11.33
A.G. Becker Paribas	128.8	6	245.08	21.47	\$12.08
Prescott, Ball	121.7	15	42.54	8.11	\$ 8.68
Laidlaw Adams & Peck	119.9	19	11.14	6.31	\$ 6.01
Tucker, Anthony	118.7	14	19.20	8.48	\$ 9.82
Moseley, Hallgarten	114.4	13	12.96	8.80	\$ 8.39
Furman Selz Mager	113.0	10	15.72	11.30	\$ 7.63
Eppler, Guerin	112.0	12	21.83	9.33	\$ 9.85
Rauscher Pierce	111.8	13	92.94	8.60	\$ 8.67
Howard, Weil	98.0	8	29.59	12.25	\$11.00
Chicago	95.3	12	252.35	7.94	\$10.92
Thomson McKinnon	88.8	5	60.42	17.76	\$11.10
Morgan Keegan	86.5	8	35.26	10.81	\$10.63
Janney Montgomery	84.4	7	22.74	12.06	\$ 8.36
Sogen Securities	82.0	1	8062.00	82.00	\$27.33
Ohio Company	81.1	11	16.09	7.37	\$10.55
Swergold, Chefitz	80.8	6	15.23	13.47	\$ 9.71
Charterhouse Japhet	78.8	1	82.50	78.80	\$17.50
Marketfield	65.7	3	0.50	21.90	\$ 5.83
Burns Pauli	65.4	3	17.35	21.80	\$10.00
Wer-Schroeder	62.9	2	177.40	31.45	\$10.38
Woodman, Kirkpatrick	62.6	4	5.60	15.65	\$10.25
Bateman Eichler	62.2	6	15.93	10.37	\$10.38
First Albany	60.6	8	21.41	7.58	\$ 9.88
McKinley	58.7	9	22.12	6.52	\$ 6.42
Steinberg	57.5	11	3.78	5.23	\$ 6.16
Warburg Paribas	57.5	1	73.50	57.50	\$23.00
Whale Securities	53.4	11	3.53	4.85	\$ 5.39
Seidler Amdec	53.1	4	13.60	13.28	\$10.97
Allen & Company	52.6	5	8.87	10.52	\$ 6.90
Needham	50.6	4	43.35	12.65	\$10.31
Becker Paribas	50.1	5	26.26	10.02	\$ 9.35
Sherwood Securities	47.8	4	26.22	11.95	\$ 4.56
Stifel, Nicolaus	46.9	5	23.84	9.38	\$ 9.70
Stephens Inc.	46.9	5	14.18	9.38	\$10.75
Institutional Equity	46.6	7	8.74	6.66	\$ 7.57
Raymond, James	46.6	7	12.63	6.66	\$ 8.32
F.N. Wolf	45.9	10	5.85	4.59	\$ 4.68
Wessels	45.0	2	44.55	22.50	\$14.50
Wm. K. Woodruff & Co.	42.3	6	6.17	7.05	\$ 6.96
Schneider, Bernet	42.2	5	9.57	8.44	\$10.05
Johnson, Lane Space	42.1	4	17.22	10.53	\$11.00
Wertheim & Co.	40.5	2	60.50	20.25	\$12.00

	Total Amount	Total Count	Assets	Offer Amount	Offer Price
Morgan, Olmstead	40.4	4	39.90	10.10	\$ 8.88
First Affiliated	40.0	12	1.27	3.33	\$ 4.42
Rothschild	39.3	2	7.50	19.65	\$14.25
Hanifen, Imhoff	38.8	5	26.80	7.76	\$ 7.15
Volpe	37.6	1	24.30	37.60	\$12.00
Legg Mason	37.5	5	94.06	7.50	\$ 9.40
Ryan, Beck	36.0	3	182.73	12.00	\$12.58
Invemed Associates	34.3	2	3.60	17.15	\$12.50
Paulson Investment	34.0	10	1.31	3.40	\$ 4.01
H.J. Meyers & Company	33.8	6	4.30	5.63	\$ 6.33
Weber, Hall, Sale	33.1	7	3.97	4.73	\$ 4.18
Carolina Securities	32.0	5	4.38	6.40	\$ 7.40
Fox Pitt	31.4	2	17.15	15.70	\$ 9.50
Meuse, Rinker	31.1	1		31.10	\$10.00
First of Michigan	30.8	4	14.62	7.70	\$ 9.50
George K. Baum & Co.	30.2	2	27.05	15.10	\$12.75
Moseley Securities	29.7	4	29.78	7.43	\$ 7.75
Gilford Securities	28.3	7	0.57	4.04	\$ 6.14
Baker, Watts	27.5	3	17.97	9.17	\$10.67
James J. Duane & Co.	26.5	6	1.88	4.42	\$ 6.83
R.J. Dickinson & Co.	25.3	6	1.10	4.22	\$ 6.29
Johnston, Lemon	24.7	3	9.67	8.23	\$ 6.42
S.D. Cohn & Co.	24.3	7	0.81	3.47	\$ 2.04
Blackstock	22.8	5	4.26	4.56	\$ 5.65
First Equity Corp.	22.7	3	2.30	7.57	\$ 8.50
London Freed	22.2	1	21.90	22.20	\$12.00
Craig-Hallum	22.1	7	0.90	3.16	\$ 4.20
Roney	22.1	3	108.73	7.37	\$12.00
Investment Corp. of Va.	22.0	1	27.30	22.00	\$11.00
Starr Securities	21.9	6	1.23	3.65	\$ 5.21
Mabon, Nugent	20.0	1	0.20	20.00	\$10.00
Lovett Mitchell Webb	19.8	2	24.70	9.90	\$ 8.75
Lowell H. Listrom & Co.	19.7	7	3.03	2.81	\$ 5.14
Evans LLewellyn	19.4	6	9.97	5.42	\$ 7.23
Freehling	19.1	2	0.96	9.55	\$ 8.00
Nomura	18.4	2	23.85	9.20	\$10.25
Fitzgerald, DeArman	18.0	5	2.70	3.60	\$ 4.45
Milwaukee Company	18.0	3	25.17	6.00	\$ 7.38
Enskilda Securities	18.0	1	26.30	18.00	\$ 9.00
Wm. Sword & Company	18.0	1	72.00	18.00	\$12.00
Birr, Wilson	17.6	4	6.13	4.40	\$ 6.06
B.C. Christopher & Co.	17.3	4	2.60	4.33	\$ 5.50
Werbil-Roth Securities	17.0	7	2.71	2.43	\$ 2.79
Adams, James	16.7	5	3.58	3.34	\$ 4.80
First Analysis	16.3	1	12.50	16.30	\$12.50
Commerce Capital	16.0	2	10.00	8.00	\$ 8.00
Comiteau Levine	15.8	6	3.03	2.63	\$ 1.50
Gintel & Company	15.8	2	6.45	7.90	\$ 8.38
Josephthal	15.6	3	9.27	5.20	\$ 7.58
Southwest Securities	15.4	3	2.73	5.13	\$ 6.50
N. American Investment	15.2	3	1.53	5.07	\$ 5.67
W.H. Newbold	15.0	3	75.47	5.00	\$15.50

	Total Amount	Total Count	Assets	Offer Amount	Offer Price
Scott & Stringfellow	14.8	4	15.70	3.70	\$ 6.44
Sherwood Capital	14.8	2	40.55	7.40	\$ 5.13
John G. Kinnard & Co.	14.7	3	4.00	4.90	\$ 5.00
Brean Murray	14.7	2	9.50	7.35	\$ 9.00
Blinder, Robinson	14.4	4	11.58	3.60	\$ 0.45
Engler & Budd	14.0	6	1.07	2.33	\$ 2.50
Van Kasper & Company	13.9	3	3.83	4.63	\$ 6.21
Summit Investment	13.0	4	1.38	3.25	\$ 4.60
Cazenova	12.8	1	6.90	12.80	\$ 8.50
Wm. C. Roney & Company	12.7	3	12.83	4.23	\$ 8.08
Bacon Stifel	12.6	3	3.30	4.20	\$ 7.50
First Uni Ca	12.4	2	8.45	6.20	\$ 4.25
N. Donald & Company	11.6	4	34.08	2.90	\$ 0.95
Rodman	11.6	1		11.60	\$ 7.25
Illinois Company	11.2	1	29.00	11.20	\$16.00
Dickinson, Rothbart	10.5	1	36.30	10.50	\$15.00
Burgess & Leith	10.4	2	12.05	5.20	\$ 9.69
Hickey, Kober	10.3	3	1.57	3.43	\$ 2.83
San Diego Securities	10.3	2	0.35	5.15	\$10.00
Stuart James	10.2	5	0.37	2.04	\$ 0.08
Herzfeld & Stern	10.2	2	11.25	5.10	\$ 7.75
Underwood, Neuhaus	10.1	2	3.75	5.05	\$ 8.25
A.L. Havens	10.0	3	2.40	3.33	\$ 1.00
Akroyd & Smithers	10.0	2	6.15	5.00	\$ 5.00
First Wilshire	9.3	3	2.77	3.10	\$ 5.67
Yorke-McCarter	9.3	2	1.05	4.65	\$ 6.13
Ferris & Company	9.2	3	8.43	3.07	\$ 9.08
Baer	8.9	2	2.40	4.45	\$ 3.75
Spectrum Securities	8.9	2	2.10	4.45	\$ 1.69
Muller & Company	8.8	2	9.60	4.40	\$ 5.63
Stern Brothers	8.6	2	0.75	4.30	\$ 8.00
R.J. Steichen & Co.	8.5	2	1.40	4.25	\$ 2.38
J.W. Kaufmann & Company	7.9	3	0.30	2.63	\$ 2.92
Manley, Bennett	7.6	2	0.80	3.80	\$ 6.50
J.T. Moran	7.6	2	1.70	3.80	\$ 4.88
Providence Securities	6.9	3	1.57	2.30	\$ 3.50
K.A. Knapp	6.5	2	2.70	3.25	\$ 5.00
I.M. Simon & Co.	6.5	2	2.80	3.25	\$ 5.88
Chapin Davis	6.0	2	14.65	3.00	\$ 2.00
E.J. Pittock	5.5	2	0.60	2.75	\$ 0.63
Chesley & Dunn	5.0	2	1.00	2.50	\$ 0.38
Pagel	4.9	2	0.75	2.45	\$ 3.75
Swartwood, Heese	4.8	2	0.75	2.40	\$ 5.00
Heiner-Stock	4.4	2	1.55	2.20	\$ 1.63
J.W. Gant & Associates	4.2	2	0.35	2.10	\$ 0.55
Greentree Securities	4.1	2	4.80	2.05	\$ 2.00

REFERENCES

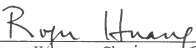
- Analysis of Initial Public Offerings of Leveraged Buyouts. (New York: Kidder, Peabody and Company). 1987.
- Beatty, R. and J. Ritter. "Investment Banking, Reputation and the Underpricing of Initial Public Offerings." Journal of Financial Economics 15. 1986. pp. 213-232.
- Carter, R. and S. Manaster. "Initial Public Offerings and Underwriter Reputation". unpublished working paper, Iowa State University and the University of Utah. 1988.
- Chalk, A. and Peavy, J. "Initial Public Offerings: Daily Returns, Offering Types and the Price Effect." Financial Analysts Journal. Sept.-Oct. 1987. pp. 65-69.
- Daily Stock Price Guide for Over-the-Counter Stocks. (New York: Standard and Poor's Corporation). 1983-1987.
- Daily Stock Price Guide for New York Stock Exchange Stocks. (New York: Standard and Poor's Corporation). 1983-1987.
- Daily Stock Price Guide for American Stock Exchange Stocks. (New York: Standard and Poor's Corporation). 1983-1987.
- Ferenbach, C. "The IPO Market Welcome for LBOs in Transition". Mergers & Acquisitions. November/December 1987. pp. 54-59.
- Ibbotson, R. "Price Performance of Common Stock New Issues." Journal of Financial Economics 2. 1975. pp. 235-272.
- Logue, D. "On the Pricing of Unseasoned Equity Issues: 1965-1969." Journal of Financial and Quantitative Analysis. January 1973. pp. 91-103.
- McDonald, J. and A. Fisher. "New Issue Price Behavior." Journal of Finance. March 1972. pp. 97-102.
- Miller, R. and F. Reilly. "An Examination of Mispricing Returns and Uncertainty for Initial Public Offerings." Journal of Financial Management. Summer 1987. pp. 33-38.

- Muscarella, C.J. and M.R. Vetsuypens. "Initial Public Offerings and Information Asymmetry." Working Paper 87-3. Southern Methodist University: Center for the Study of Financial Institutions and Markets. 1987.
- Radcliffe, R. Investment Concepts, Analysis and Strategy. (Glenview, Illinois: Scott, Foresman and Company). 1982. p.57.
- Reilly, F. and K. Hatfield. "Investor Experience With New Stock Issues." Financial Analysts Journal. September-October 1969. pp. 73-80.
- Ritter, J. "The 'Hot' Issue Market of 1980." Journal of Business 32. 1984. pp. 215-239.
- _____. "The Costs of Going Public." Journal of Financial Economics 19. 1987. pp.269-281.
- Rock, K. "Why New Issues are Underpriced." Journal of Financial Economics 15. 1986. pp. 187-212.
- Shaw, D. "The Performance of Primary Common Stock Offerings: A Canadian Comparison." Journal of Finance. 1971. pp. 1101-1113.
- Slovin, M.B. and J.E. Young. "Bank Lending and Initial Public Offerings." unpublished working paper, University of Colorado at Denver. 1986.

BIOGRAPHICAL SKETCH

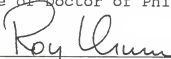
Kathleen Ann Weiss received a Bachelor of Science in Business Administration from Indiana Univerisity in 1983 and will receive her Ph.D. in Finance from the University of Florida. She is currently a research economist at the U.S. Securities and Exchange Commission in Washington, D.C. Ms. Weiss has accepted an assistant professor position in the Department of Finance at the University of Michigan to begin in the fall of 1988.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.



Roger Huang, Chairman
Associate Professor of Finance,
Insurance and Real Estate

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.



Roy Crum
Professor of Finance, Insurance
and Real Estate

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.



Roger Blair
Professor of Economics

This dissertation was submitted to the Graduate Faculty of the Department of Finance, Insurance and Real Estate in the College of Business Administration and to the Graduate School and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

August, 1988

Dean, Graduate School